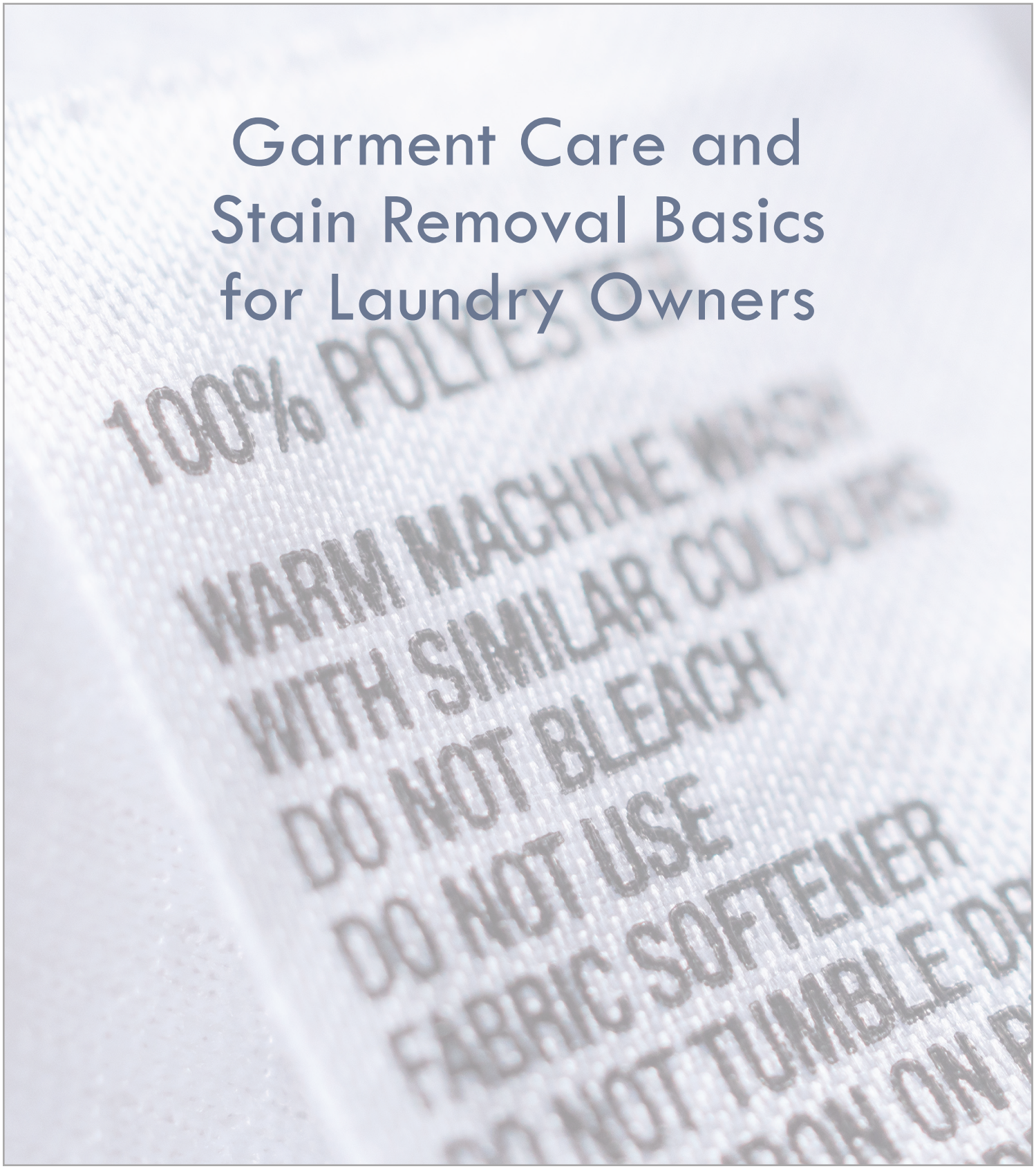
Garment Care and Stain Removal Basics for Laundry Owners



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Garment Care and Stain Removal Basics for Laundry Owners

Most people know the basics of garment care. They know not to put a wool sweater in the dryer and, hopefully, not to wash a red blouse with white dress shirts. Most people also understand what garments can safely be washed and what garments need to be drycleaned. However, as fabrics become more complex and manufacturers combine different and new materials, the complexity of keeping garments looking new and fresh has grown. It has become the domain of today's laundry professionals, and they are relied upon in ever-increasing numbers by the general public. The average person simply does not have the time or inclination to be a laundry and fabric expert. Due to the global nature of all manufacturing these days, many label and care instructions don't even use the printed word, instead utilizing universal symbols. If you're not in the laundry industry, you may not know the meaning of those symbols.

Understanding Care Labels

It is imperative to understand the care labels provided by garment manufacturers. The makers of garments want their customers to be delighted with their products through many wearings, and they provide some basic guidelines. But if one does not understand the instructions, they can easily ruin their garment after just one cleaning.

Typically, clothing care labels consist of symbols or pictograms. Care labels are required by law in many countries, including the U.S. (However, laundry customers sometimes will remove them.) The symbols are intended to bridge language barriers. These symbols are designed to be clear and concise but, unfortunately, that is not always the case. Recently, the Shout 2015 New Generations of Stains Survey found that when shown the dryclean-only symbol, only 11 percent of Americans knew what it meant. This can lead to confusion on the part of the consumer and, in some cases, cause catastrophic results when attempting to clean and freshen a favorite piece of clothing.

Knowing the meaning of all the care label symbols will be of tremendous benefit to the laundry professional. These symbols will indicate if a garment may be put in the washing machine or if it requires hand washing. If a washing machine may be used, the symbol will indicate the water temperature recommended for that particular garment. The symbol will indicate whether to use cold, warm or hot water. In some instances it may indicate the preferred temperature exactly. These symbols will also indicate if bleach may be used and even the type of bleach. They will guide you as to whether or not to tumble dry, line dry or lie flat.

In essence, the care label will indicate everything you should know about the proper care of the garment or fabric, as well as the mechanical action for cleaning it. But remembering each and every symbol and what it indicates can be a somewhat daunting task. It can be handy to have a cheat sheet available listing all the symbols and their meanings as there are quite a few. Thanks to the many hard-working and dedicated professionals at the American Cleaning Institute, such a chart exists. It is included here for your reference. Keep this document handy and you should never be left wondering what a particular symbol is telling you.

Key Terms

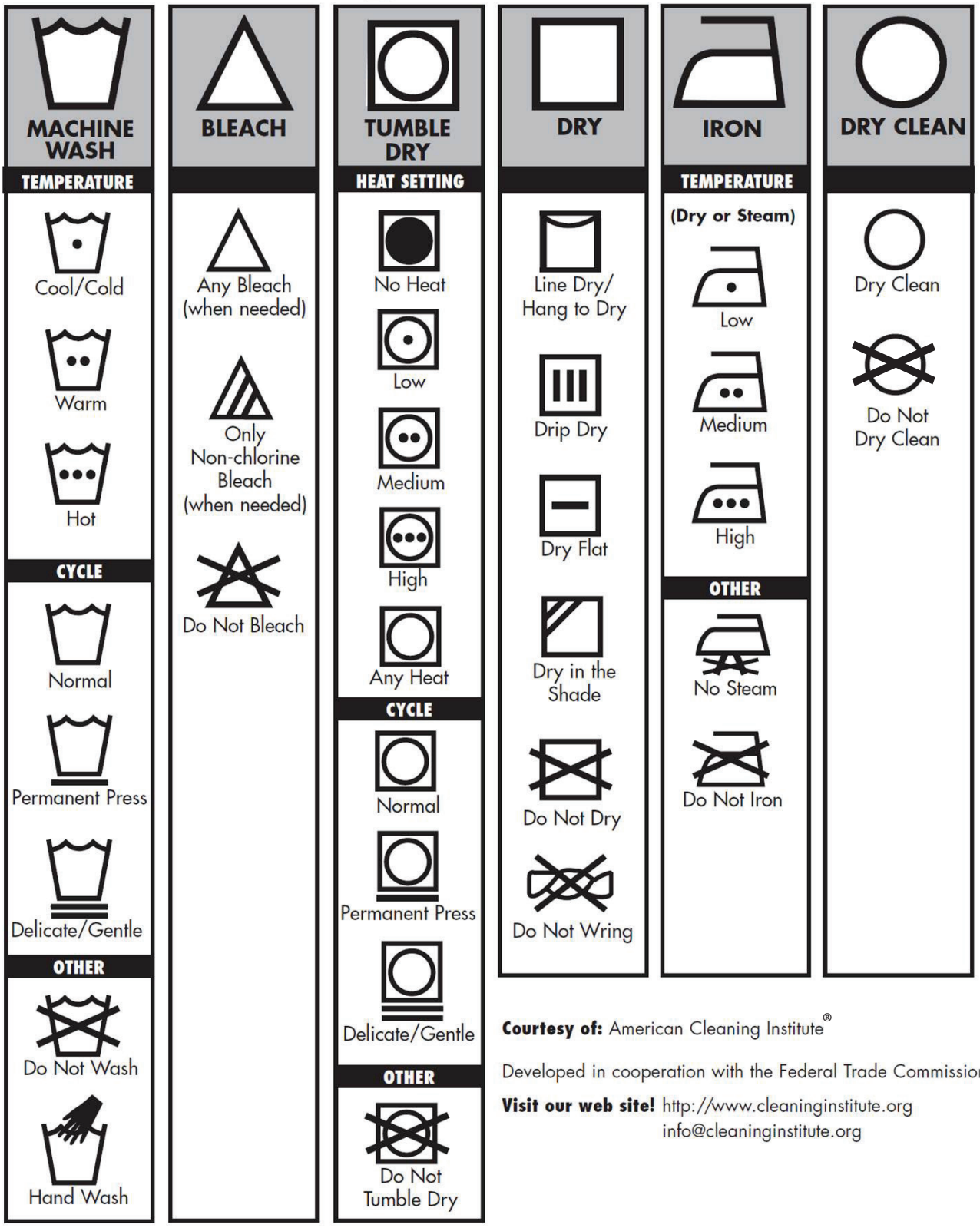
Understanding the care label symbols is just the first step on our journey. We now know in which direction to proceed, but we need to understand what type of products to use. There are many types of detergents, bleaches and softeners on the market today and more are being introduced every day. Some people like to stick with what they have been using for years. It always worked in the past, so why not now? But advances in chemistry not only lead to new cleaning products, they also lead to the creation of new and exciting materials for manufacturers to use in their clothing lines. Many of these new materials will not only be ruined by an old fashioned cleaning product, but they may not be compatible with certain new and advanced products as well. Again, understanding the language of the cleaning product manufacturer can help determine which product category to search in for a specific cleaning situation.

Soap – This is a natural product. Soap is created by mixing fats and oils with alkali or base. It has been around for hundreds of years. Since soap is natural, it is biodegradable and less harmful to the environment than detergents. However, the minerals in water react with soap and can turn clothes gray and leave a film or residue.

Detergents – Detergents are made by combining chemicals in a slurry mixer. The mixture heats up as a result of chemical reactions, and then it can be dried and powdered to form the final product. On average, there are about ten steps between the original raw materials and the final detergent. Because detergents don't react as much with the minerals in water, they are the best choice for laundry. Liquid detergents work better in cold water. However, dried products can be more concentrated and thus inexpensive.

Bleach – There are a number of different types of bleach

Your Guide to Fabric Care Symbols



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on the market today. The most common of these is chlorine bleach, which has sodium hypochlorite as the active ingredient. Generally, this is the best cleaning, stain/soil removal bleach. It is also the only disinfecting bleach and may be used around the house to clean and disinfect a wide variety of surfaces. The non-chlorine or oxygen bleaches were developed to be safely used on colored clothing. But they are not as strong and are not a disinfectant. As a stain remover, bleach is designed to work best after the soil/stain is removed, reacting with the remaining discoloration of that stain.

Softener – Fabric softener (also called fabric conditioner) is a chemical compound that prevents static cling and confers many other desirable properties to laundry that has been machine-washed. They are available as solutions and solids, sometimes impregnated in dryer sheets. Liquid fabric softeners are designed to be added to water, either by adding the product manually to the final rinse or by dilution in an automatic dispenser. Dry fabric softeners are typically supplied in the form of dryer sheets, which are added to clothing in the dryer to soften the fabric and prevent buildup of static electricity in susceptible fabrics. Softeners are added during the last part of the wash cycle. They effectively coat the garments with a thin layer of film to keep the fiber ends lying flat – preventing them from collecting an electrical charge and also helps to prevent "pilling."

Drycleaning – Although it's not directly related to the vended laundry experience, no discussion of garment care would be complete without a mention of drycleaning, which refers to any cleaning process for clothing and textiles using a chemical solvent other than water. It is used to clean fabrics that degrade in water, and delicate fabrics that cannot withstand the rough and tumble action of a washer and dryer. Despite its name, drycleaning is not a "dry" process, as the garments are soaked in a liquid solvent. It's important to note that drycleaning (1) is not a color-safe process, (2) does not work well on water-soluble stains, and (3) works very well on oil-based stains. Drycleaning is a great method for cleaning silk, wool, polyester, rayon and petroleum-based fabrics.

Proper Sorting

So we've read and understood the care labels and we've also looked at the different products available for use on laundry day. And the first big thing we have noticed is that we can't wash everything together! Now we have to sort the garments in to separate groups before washing. But what is the proper approach to sorting.

The first step in the sorting process may seem obvious until you watch a first-year college student do their laundry. They tend to throw everything into one or two loads as it's quicker and cheaper. But when taking this approach, colors fade, whites dull, and clothes just don't look good for very long.

There are a couple of basic steps to always follow as you begin the sorting process. Start by going through everything and turning all the clothes right side out and make sure there are no legs of pants or arms of shirts tucked in the garment improperly. Check the Care Label in case a certain garment requires washing inside out. At the same time, check for any items that require hand washing and set them aside. Make sure you go through all the pockets and empty them. Washing a blouse with lipstick in the pocket is a sure fire disaster.

Now we need to separate the colors from the whites. This is the cardinal rule of laundry day. We all know it (we hope), but we all make mistakes and pay for it with a bunch of pink socks and under garments. No matter what your laundry sorting habits are, this is the one rule you must always adhere to, no ifs, ands or buts.

It is important to look for dark and red garments. These items can have a high tendency to bleed. Using a dye catcher in loads of dark and red garments or creating small mixed loads is a great way to handle this challenge.

Next, we look at the weight of garments, such as jeans and t-shirts and separate them into heavy and light weight piles. This may not be something one typically thinks about, but it won't take long and isn't too tricky. It really is a good idea to sort by weight so thinner fabrics don't get damaged by heavier ones. It also allows for everything in a load to have a similar wash and dry time.

Remember those care labels? Check the labels and further divide the piles based on temperature, wash cycle requirements and fabric type.

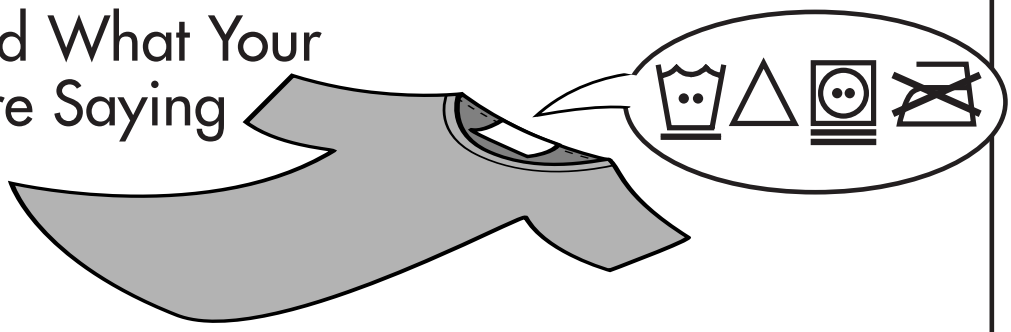
Next, consider the type of cleaning product you want to use. Just because an item is white does not mean that you may use bleach. Again, follow those care labels and sort into bleach and no bleach piles. Remember that cold water (less than 50 degrees F) has very little cleaning ability and detergents will have little effect.

Last of all, take a good look at the piles you have made and do one more sort. Pull out all the heavily soiled clothes such as those jeans that were worn while gardening and that shirt worn while changing the oil on the lawn mower. Make separate piles and wash all those heavily soiled clothes last.

All the while you are sorting, keep an eye open for tough stains. The earlier you can spot and pre-treat a stain, the better off you will be. If a badly stained garment makes it all the way through the wash cycle and the dryer it may never come out. Keeping all of your stained items together makes it easier to check everything after the wash cycle and ensure that all those dirty spots are gone.

Fabric Care Language Made Easy!

Understand What Your Clothes Are Saying



If you know these symbols...

WASH

BLEACH

TUMBLE DRY

IRON

DRY CLEAN

and these codes...

More Dots → More Heat

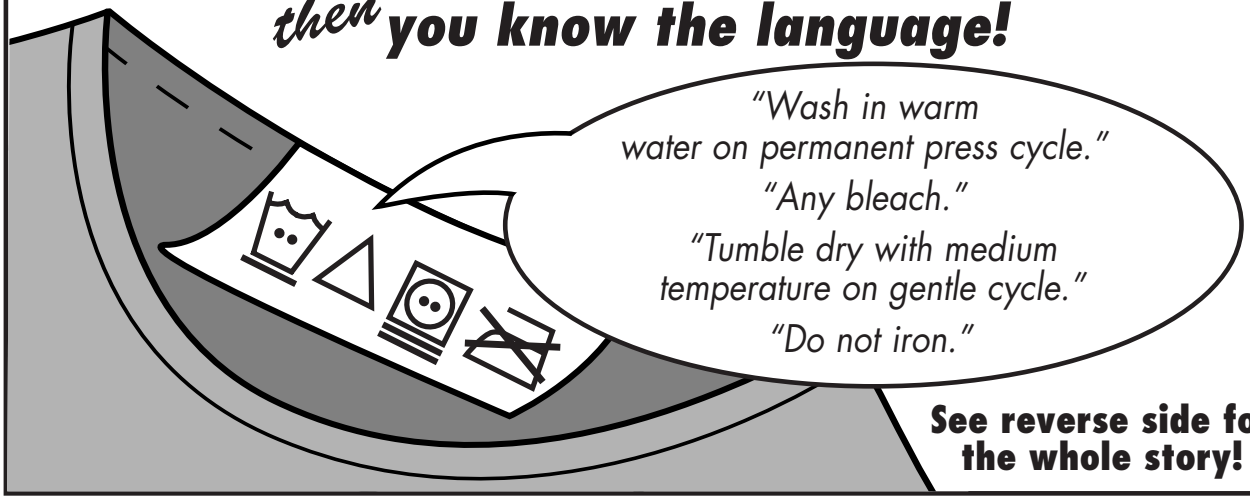
COOL/ LOW | **WARM/ MEDIUM** | **HOT/ HIGH**

More Bars → More Gentle

PERMANENT PRESS CYCLE | **GENTLE/DELICATE CYCLE**

DO NOT

then you know the language!



See reverse side for the whole story!

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Following these simple guidelines may require a little extra time, but in the long run, the clothes will look better for a longer period of time.

Common Fabric Types and Associated Care

Natural fibers and synthetics along with various blends of each create a plethora of fabric types available on the market today. While many of these fabrics seem similar, they each have unique properties that make their associated care approach unique as well. This section provides an overview of some of the more common fabric types available to consumers and how to approach their care.

- ***Cotton***

Cotton is one of the most well-known and popular natural fibers. It may be used alone or in a blend of synthetic or other natural fibers. Cotton is a versatile and comfortable fabric making it a worldwide favorite for manufacturing many types of garments. Cotton can be found in an extremely wide variety of clothing, from items as casual as a T-shirt to an elaborate designer dress.

Unless a garment has been preshrunk or processed, cotton is prone to shrinkage. When considering how to clean a cotton garment, the best place to begin with is the Care Label. A "Cold water only" symbol most likely indicates that this particular garment will shrink if not washed properly.

However, if a cotton garment has been preshrunk it may be able to be washed in hot, warm or cold water, depending on the color of the garment. Again, before proceeding, be sure to refer to the Care Label instructions.

If the Care Label indicates that it is allowed, add chlorine bleach to white cotton wash loads to remove stains. Colored cotton garments may be brightened with the addition of a non-chlorine bleach formulated for colored clothing. Cold-water washing will protect the deep color of darker garments and preserve the pep of brightly colored ones.

Over drying cotton will encourage shrinkage; dry cotton garments at a lower heat and remove them from the dryer while still fairly cool.

- ***Linen***

Linen is another well-known and popular natural fiber. Professional care is recommended for many linen garments, so as always, check the Care Label. If the Care Label identifies the garment as being machine washable, proceed using a water temperature that coincides with the garments color. A specific temperature may be indicated on the Care Label. Linen tends to absorb more water during the washing process than other fibers, so guard against overcrowding in the washer and dryer.

Linen should be ironed on a padded surface using steam, not directly on a hot surface. Be sure to not leave the iron in one spot for too long to avoid burning.

- ***Polyester***

While many people do not think of polyester as a high-end fabric, others may consider it the "wonder fabric" of the 20th century. This versatile fabric offers manufacturers incredible versatility beyond simply wearable garments. Polyester allows for the creation of colorful, durable and easy to care for garments of all kinds. While most polyester garments may be machine washed using warm water, it is always a good idea to refer to the Care Label.

The vast majority of polyester garments may be tumble dried on the low heat setting. They should be removed from the dryer while still slightly damp to prevent wrinkles and static cling. Be aware that if ironing is required, use a low heat setting, polyester may melt under a hot iron.

Today, many forms of polyester are being created and mixed with other fabrics to create things like washable wool, wicking sportswear, water-repellent garments, and wrinkle-free cottons.

- ***Silk***

Supple, strong and lustrous, silk is a natural fiber and is among the world's oldest clothing materials. Silk fiber itself is washable, however, many weave patterns used in the manufacture of silk fabric will tighten or pucker if washed, and deep dye tones may not be color-fast.

As always, let the garment Care Label be your guide when cleaning silk garments. "Dry-clean only" signals a fabric or construction that will not survive washing. When cleaning washable silk garments, use a product specially formulated for hand washing or delicate fabrics. Mild baby shampoo (without conditioning additives that may add wax or oils) is a good choice for hand-washable silk fabrics. It will clean the natural protein and revitalize the fiber.

Silk garments are never recommended for tumble dry. The garment should be rolled in a towel to press out moisture and then should be hung up to dry. Press silk garments with a warm iron, using indirect heat.

- ***Wool***

Wool is a natural soft, warm fiber made from the coats of sheep and other animals. Naturally insulating and easy to dye, wool fabric runs the gamut from rugged tweeds to soft sweaters.

Wool is frequently made from curly hair fibers. They sometimes are straightened to be woven into the fabric. However, moisture and heat can cause the fibers to curl back up and create shrinkage.

In its natural state, wool is washable, but because many wool garments incorporate construction methods that cannot be washed, check the Care Label to determine if a garment is dry clean only or if it is washable. If washable, use a gentle detergent and hand wash or machine-wash as directed.

Wash and rinse wool fibers in lukewarm water. Using cold water to rinse can actually cause shrinkage when it comes to wool.

- ***Rayon***

Rayon is a popular semi-synthetic fabric created from wood pulp mixed with chemicals. It is a cool and comfortable fabric used in a wide variety of garments from blouses to work clothes.

Originally, rayon was a dryclean-only fabric. However, the fiber producers discovered that they could create washability in rayon by putting certain finishes on the surface of the fabric after it was knitted or woven. These finishes added to the price of the material, so many garments today remain untreated.

It is imperative to read the care label, as all rayon garments are not washable. It's important to note that most of the washable rayon garments today are hand-washable-only and should be drip dried or dried flat. These directions should be followed closely, because when rayon is wet, it actually loses 30 percent to 50 percent of its strength. The constant agitation of the washer and tumbling of the dryer will beat the garment against the side of the washer and dryer. Eventually, this will cause the fibers to break down and shorten the life of a rayon garment.

Common Stains and How to Remove Them

Due to the gains in fabric development today, many garments are more resistant to stains than ever before. And the constant research and development of presoak and enzyme based products have also made stain removal easier. But there is just no way to possibly avoid never staining a favorite article of clothing. While each stain and garment may require different approaches, there are some commonalities when it comes to stain removal.

If at all possible, regardless of the type of stain you are dealing with, try to prevent it from setting. "Setting" is an informal term that refers to the staining material forming a chemical bond with the fabric. Rinse the stain with cold water rather than letting it dry and avoid heat. Heat can speed up the process of a stain bonding with the fabric. Avoid too much pressure, a light dabbing of water or solvent and letting it soak is a better practice than hard rubbing.

And don't vigorously rub a stain! Not only may it further embed the stain into the material, but it can also tear the fibers.

Some of the more common stains we encounter in everyday life are grass, blood, wine, chocolate, cooking grease and oils, lipstick and makeup, coffee and motor oil. In the past, any of these stains could ruin a garment, but today, we may be able to save that garment instead of tossing it in the trash or relegating it to the back of the closet. But no matter what type of stain you are dealing with, the first consideration should be the type of fabric that has been stained. Some

types of stain removers should not be used on certain fabrics. Use the wrong type of solvent and you can end up damaging your garment worse than the original stain.

Always check the care label, in many cases it will provide you with the best direction to take. If there are no specific instructions, your best bet is to go by fabric type.

- ***Cotton***

This fabric can endure soaking, drying, and heat, although as previously mentioned, you should avoid heat. It's easy to bleach white cotton, but very hard on the fabric, so use chlorine bleaches as a last resort, and dilute them well. The best stain treatments for cotton are detergents and light acids such as lemon juice or vinegar.

- ***Wool***

A fabric that is much more heat-sensitive than cotton, and needs to be treated gently. It may be soaked, but be sure to lay it flat as it dries to prevent distortion. Use only wool-safe detergents and lukewarm water — bleaches and acidic treatments will damage the wool permanently. Treat with water or a wool detergent as soon as possible, and then get the garment to the dry cleaner at the first opportunity.

- ***Synthetics***

These can vary widely depending on the material. Rayon and polyester can be washed and scrubbed more harshly than cotton, but will be destroyed by oxidizing bleaches such as hydrogen peroxide. It's usually best to clean synthetics with a standard laundry detergent or with dish soap for grease-heavy stains.

- ***Silk***

Probably the most temperamental. Stains on silk may be treated with water, but rather than letting the wet spot dry on its own, rinse the whole garment thoroughly — otherwise you'll get water spotting, which can be just as bad as the original stain. Glycerin stain remover is also effective and neutral.

No matter what you're using, test the stain remover on an inside patch of the cloth or an unobtrusive seam before applying it to the stain to make sure it doesn't do anything damaging to the fabric. Water is the only thing you can automatically apply — and even then make sure it's the right temperature.

Once we have determined the type of fabric that we are dealing with, it is a good idea to understand the different types of cleaners and solvents that are available to us. These range from good old water to more specific and harsher solvents. Here is a rundown of the various stain removers and the type of stains where they are most effective.

- ***Water***

Universal, safe to use on basically everything, and cheap. Effective as an immediate treatment to prevent stain setting. Needs prolonged soaking to have much effect on grease/oil stains, but reduces the effect of dyes (lipstick, hair dye, bleed from other clothes, etc.) considerably. Usually not a 100% effective treatment all on its own.

- ***Salt***

Cheap and almost everyone has it. Can be applied on top of a wetted stain to give the chemicals something to leech into. Effective on sweat/deodorant armpit stains, red wine, and blood stains.

- ***Vinegar/Lemon Juice***

Mild acids are great against coffee and tea, grass stains, and sticky residues like tape and glue. Vinegar is also effective against mildew — perfect for laundry that sat wet too long. Remember, though, don't use on wool.

- ***Detergent***

Laundry and dish detergents are similar enough to use interchangeably in most situations. Dish detergent is usually harsher, and may make very delicate fabrics worse if you don't wash it out thoroughly. Both are particularly effective against grease stains, so use them on everything from gravy and burger juice to chocolate smears.

- ***Oxidizing Bleaches***

Hydrogen peroxide is the most common example here. They're effective at removing color, making them ideal for makeup stains, grass stains, and other pigment-based damage. They're less effective against grease, and can damage delicate fabrics. Dilute as needed for a milder treatment.

- ***Glycerin***

A neutral, commercially available treatment that helps to draw stains out of fabrics. Good on ink and dye stains. Many commercial "stain sticks" are glycerin, or a combination of glycerin and detergent.

- ***Mineral Spirits***

An intense treatment for very stubborn greases (asphalt/tar stains, etc.). Too strong for delicate fabrics. Wash the clothing thoroughly after treatment and air-dry.

- ***Enzyme Cleaners***

Commercial products that are sold under a variety of trade names. Highly effective on organic stains, and on stains with an odor (egg yolk, pet urine, blood, sweat, etc.). Cannot be used on wool or silk — the cleaner feeds on proteins, and both wool and silk are made from proteins.

• ***Drycleaning Solvents***
These are sold in a diluted form for home treatment of stains. Use them with caution — you're rarely better off using commercially sold dry cleaning solution than you are taking the clothes to a professional cleaner.

• ***Chlorine Bleaches***
A harsh, last-ditch remedy. Use with caution. Can damage fabric and discolor non-white cloth. Always test a small, hidden area first, and only if the tag does not say "No Bleach" or "Chlorine Free" on it.

Specific Stains

Now that we have some understanding of the various fabrics and stain removers available, let's take a look at some specific stains.

• ***Grass***
Apply stain treatment then gently rub the fabric together. An old toothbrush can be very helpful to get the treatment into the fibers. Use diluted white vinegar or ammonia to remove any remaining color. Methylated spirits, also known as denatured alcohol, can be used and is available from hardware stores and supermarkets.

• ***Blood***
Rinse immediately with cool water and salt. If possible, immerse in room temperature water with detergent and salt, and let soak for 10-15 minutes. Spot-treat with an enzyme cleaner if possible, or with a 50/50 mixture of liquid detergent and household ammonia. Launder in a separate load.

• ***Butter/Lard/Cooking Oil***
Treat immediately with lukewarm water. If possible, immerse in warm water with a 50/50 mixture of detergent and ammonia, using a spray or stick pre-treatment if available. Remove and gently dab stain with detergent; place face down on a paper towel and let stand. Repeat as needed. For persistent stains, carefully apply bleach or dry cleaning solvent from the inside of the garment and rest face down on paper towels, then wash thoroughly.

• ***Coffee***
Soak immediately with lukewarm water. Gently dab stain with detergent or with vinegar diluted in water. Wash in the hottest water recommended for the fabric and repeat as needed. Avoid bar or powder soap, which can set the stain permanently. Bleaches can be effective on coffee stains.

• ***Tomato-Based***
Remove excess sauce/paste carefully with a butter knife of spoon. Dab liquid detergent onto the stain. Rinse with cold water from underneath the stain; again, you don't want to push it back into the fabric. Launder normally, according to the tag.

• ***Engine Grease/Machine Oil***
Treat immediately with warm water. As soon as possible, soak in warm water with heavy-duty detergent. Remove, treat stained area with detergent directly, and lay face-down on paper towels. Launder separately. Repeat as needed. Dawn dishwashing liquid also is a great degreaser.

• ***Red Wine***
Treat immediately with warm water. Salt the stain and let

stand if possible. Rinse salt out, dab gently with detergent or glycerin, and lay face down on a paper towel. Rinse again and launder normally. Avoid bar or flake soaps, which can set the stain permanently.

- ***Chocolate***

Allow the chocolate to completely harden then gently remove as much of the chocolate as you can. Treat with colorless dishwashing liquid and water. Gently blot the stain using a light-colored cloth. If the stained was milk chocolate, use a few drops of ammonia. If the stain was dark chocolate, use two tablespoons white vinegar (for colors) or hydrogen peroxide (for whites). Use a mixture of one tablespoon of enzyme laundry detergent and two cups of water. Allow item to pre-treat for 20 minutes then rinse thoroughly.

- ***Lipstick/makeup***

Apply a prewash stain remover. Gently rub into the stain and then let soak for approximately five minutes. Next, wash with detergent and a bleach (chlorine or non-chlorine depending on the color) in the hottest water the fabric will tolerate.

The Science of Washing Clothes

You may have noticed from the previous sections that the art of science, and specifically chemistry, plays a rather large part in the garment industry. From the creation of new materials and blends for fabric manufacturers to the products for removing stains from garments, science is a work every day. The same is true for appliance and detergent manufacturers. The makers of these products have a staff of scientists experimenting and researching new products on a constant basis. Let's take a look at this science to get a better understanding of how clothes get clean.

- ***The Elements of Water Temperature***

The water temperature is a key element to getting clothes clean. Heat will speed up the chemical reaction of the detergent. Some studies have shown that a 15 degree drop in water temperature will reduce the chemical reaction by 15%. Others have shown the drop to be as great as 50%. While many scientific studies disagree on the exact numbers, it is a fact that as the water temperature is decreased, the chemical reaction with the detergent decreases as well. This is the main reason to wash garments in the warmest temperature that the Care Label recommends. The water temperature will also effect the time of the wash cycle. The longer garments are exposed to heat, the better the chemical reaction and the cleaner the clothes. This is also why the cold water cycle runs for a longer period of time than warm or hot cycles. More time equals more agitation which is an attempt to make up for the loss of heat in a cold water wash.

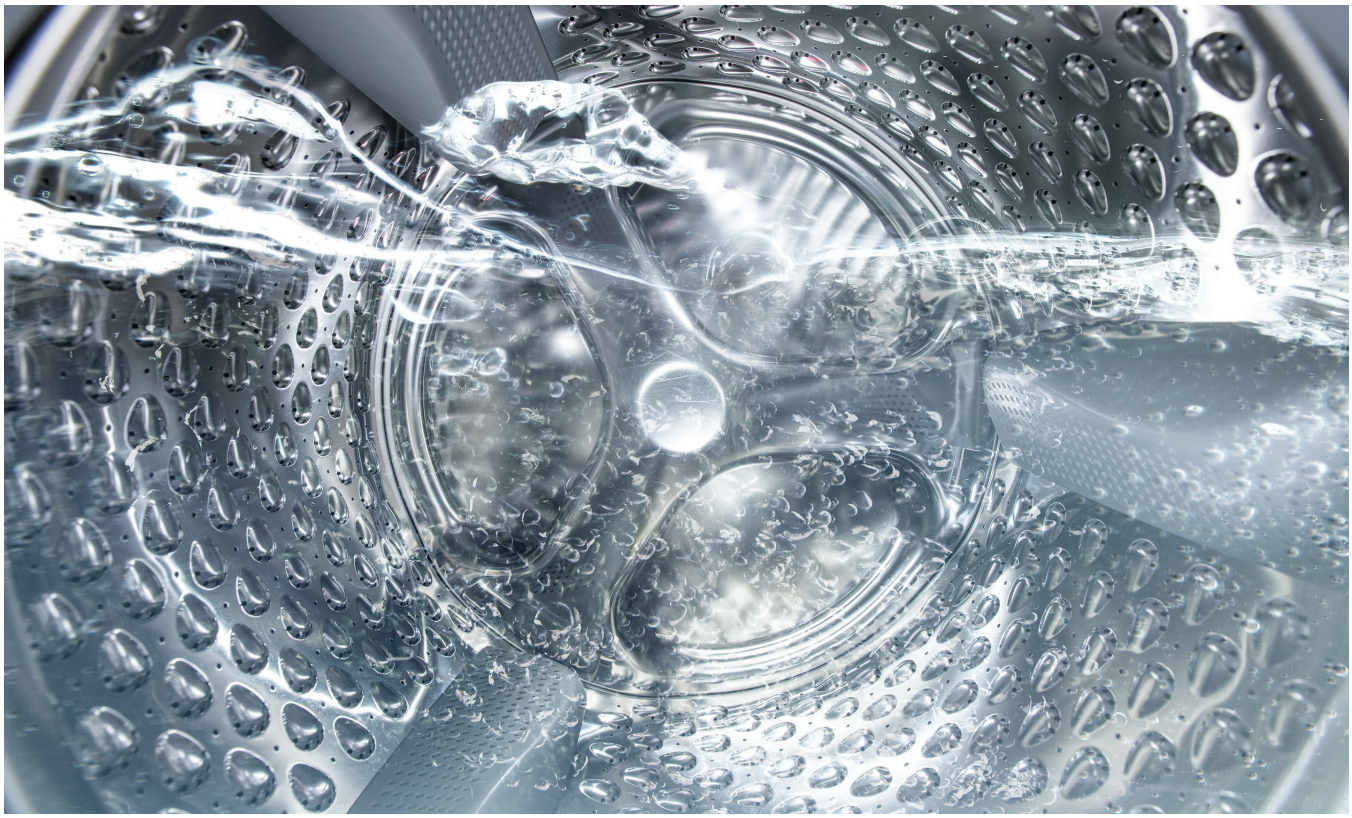
- ***Chemistry of Laundry Detergent***

Modern laundry detergents contain an impressive array of chemicals that aid in the cleaning process and the conditioning of garments. These include chemicals that not only digest dirt and stains, but clean the water as well. Laundry detergents require four factors to get your clothes clean – water, heat, time, and agitation. These four factors are the essential parts of the process, and modern laundry detergents are created to make the most of all of them over a large range of fabrics and materials.

Tap water is notorious for containing calcium and various metals that will interfere with the wash process. Consequently, the bulk of laundry chemicals in modern detergent is made up of conditioners that will bind these elements together and keep them out of the way. This is why areas that are known for "hard" water usually require more detergent. The more minerals in the water, the more conditioner required to remove them. The most common conditioner today is sodium carbonate. It is not as effective as some of the older chemicals, but it causes far less ecological damage. In a typical box of laundry detergent, conditioners may take up more than half the weight.

The second biggest ingredient found in detergents is a chemical class referred to as a surfactant, which is one of the main active ingredient that lifts and removes stains. These surfactants tend to be polar opposites of each other. Most modern detergents are a class of chemicals called linear alkylbenzonesulfates. These are created from long chains of a chemical called a dodecane, which in turn, is composed of long chains of carbon and hydrogen. This chemical readily forms long chain molecules. Attached to this is a benzene ring, with a sulfate molecule attached. These two parts fundamentally disagree about something very important to washing – and that is how they feel about water. The dodecyl chain hates it, doing all it can to get away from it. The benzosulfate bit, however, loves water and wants to get close to it. Chemists call these properties hydrophobic (water-hating) and hydrophilic (water-loving), and this conflicting nature is what makes detergents so powerful. Dodecyl chains hate water, but they like each other, and also like other chemicals like fats, sugars, proteins and such. So it basically likes all of the things that got on to the garments that we want to remove.

When detergent is introduced to water, these two parts of the detergent molecules begin a beneficial conflict. The benzosulfate bit is happy to swim about loosely bonding with water, while the dodecane chain wants to repel the water. When these molecules come in contact with something other than water, such as the dirt or stain on the fabric, they reach a compromise of sorts, with the dodecyl chain attaching



to the dirt, and the benzosulfate chain staying with the water. As agitation moves the garment around in the water, the dirt will attract the dodecyl chain of more detergent molecules, covering it. The benzosulfate molecules are still trying to hang onto the water. Eventually, the two reach a compromise by creating a small globe around the dirt, which then floats off the clothing into the water. That's how the stains are lifted from clothes, they are surrounded and freed by these enclosing globes of detergent. While it may appear that the dirt and stains have dissolved in the water, it is actually these globes that are floating in the water and simply go down the drain.

And that is only a part of the whole story. There are other enzymes in detergents that aid in breaking down stains and making the whole process run more quickly. Enzymes enhance the cleaning action of surfactants. Enzymes are complex molecules made by living organisms. Often called "biological catalysts," enzymes promote certain chemical reactions without themselves being changed. Enzymatic action is similar to digestive juices in the stomach, which break down food in preparation for digestion. Detergent enzymes, made by bacteria in factory production vats, react with and break up stains that are made of proteins. Such stains include blood, meat gravy, milk, eggs, and grass. Enzymes break down these substances into simpler forms that can be removed by other components in the detergent.

- ***Mechanical Agitation***

Water and detergent are obviously a big part of cleaning clothes, but if you just let everything sit there, nothing is going to get very clean.

The main purpose of agitation is to move the clothes around through the water so that the dirt and stains can be whisked away. As the clothes rub up against each other and the sides of the drum, agitation dislodges the grime. In the type of washers many of us grew up with, this was accomplished by an agitator arm in the center of the machine. Clothes were completely submerged in water and the agitator arm moved back and forth to swish things around. In today's modern HE washers, the clothes are tumbled about without the use of an agitator arm. This results in less water being needed to accomplish the task. It also allows for more room for the clothes to be moved around as there is no arm in the way. This is why it is important to have a proper sized load. If you over-load the machine, the clothes won't get the agitation needed to take stains out. Just as important, if the machine is under loaded, there may not be enough items to rub up against each other. Either way, the clothes simply do not get as clean as they should.

Clearly, proper garment care and effective stain removal are at the heart of every successful wash-dry-fold operation. Following the guidelines outlined above will help enhance the full-service segment of your vended laundry business.

Check out all of the Coin Laundry Association's White Paper topics at *www.coinlaundry.org*

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