

# Laundering Guide

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Most of us, at some point, are faced with the task of doing laundry, and we want to know the easiest and best way of doing it. Good laundry procedures can increase the wear life of clothing.

Laundering clothes is not the same as it was 20 years ago. Today's automatic washers and dryers offer a variety of features. Methods have changed; more people are washing with warm or cold water to save energy, and this can affect results.

Fabrics have changed, too. Synthetic fibers, blended fabrics, and permanent press, dyes, fluorescent whiteners, and other finishes call for different procedures. And, most of all, laundry detergents and other laundry products have changed. This publication should help you get the best results with today's equipment and products.

## Preparing and Pretreating Clothes

Preparing clothes for laundering is a step many of us are tempted to omit, but it's well worth the time it takes. Mending rips and tears before washing prevents further damage during laundering. Pretreating spots and stains has become a necessity because of the changes in detergents and increased use of synthetic fabrics that do not release soil easily.

*To prepare clothes for laundering:*

- Close zippers and hooks and eyes. This prevents damage to fasteners and keeps them from snagging other clothes.

- Shake out loose dirt. Brush dirt or lint out of pockets and cuffs.
- Mend rips and tears.
- Turn permanent press garments inside out. This helps prevent pilling and catching lint.
  - Place small items and hosiery in mesh bag.
  - Remove nonwashable parts, such as trim or belts.
  - Empty all pockets.

*To pretreat before laundering:*

- Always remove spots and stains. Use a prewash spray for some spots, or refer to a stain removal chart for more difficult ones. Rub heavily soiled areas, especially collars and cuffs, with a liquid detergent or paste of powdered detergent and water.
  - Presoak heavily soiled items. Use a laundry detergent for short soaks or a presoak product for 30 minutes to overnight soaking. Drain the soak water and wash with usual amount of fresh detergent.

## Sorting Clothes

Sorting clothes can help avoid some laundry problems. Group together items that can be washed in the same water temperature and agitation and spin speed. *Sort by:*

- Color—separate light colors from bright or dark colors, and whites (especially white nylon) from all colors. Nylon is a “color scavenger” that readily picks up colors from other clothes. Many dark or bright colors need cooler water temperatures to prevent fading.

- Fabric, construction, texture—read care instructions.

Some fabrics need hot water; others need warm or cool. Delicate fabrics, such as loose knits or lingerie, need gentle agitation; sturdy fabrics need regular wash cycles. Permanent press and many synthetics need special machine cycles to prevent wrinkling.

Separate “lint-givers” such as terrycloth and chenille from “lint-takers” such as permanent press, synthetics, corduroy or velveteen.

- Degree of soil—wash lightly soiled clothes separately from heavily soiled work or play clothes.

Better laundry results can be achieved without wasting water by using a washing machine with variable water level settings so you can wash two or three small loads of properly sorted clothes rather than one large mixed load.

## Load Size

Weight of clothes is not an accurate indication of load size. Judge the size of wash loads by bulk (amount of space the items occupy) rather than

pounds. Load wash baskets loosely, as clothes must circulate freely for thorough cleaning and rinsing. Overloading can cause poor cleaning, excessive lint and extra wear on clothes.

For best washing action, wash articles of different sizes together to allow good circulation. For example, don't put more than two or three sheets in a load; fill it out with small articles. Permanent press and synthetics should be washed with fewer items per load to minimize wrinkling and improve cleaning. Washing machine capacities are increasing; read the instruction manual for your machine to determine load sizes.

## Water Temperatures

In general, the hotter the water the better the soil removal. However, many clothes cannot be washed in hot water because shrinkage or fading may occur. Read care instructions to determine temperatures needed. If clothes are heavily soiled but cannot be washed in hot water, it may help to presoak clothes or increase the amount of detergent and lengthen washing time to improve cleaning.

Check the actual water temperature on the warm setting of your washing machine. This could vary from summer to winter because the temperature of the cold water coming into the house can be much colder in the wintertime. Also, hot water temperature varies according to the water heater setting and the heat loss as the water goes through the pipes.

Hot water is 130° F (54.4° C) or above. The temperature range for warm water should be 90° to 110° F (32.2° C to 43.3° C). Cold water is 80° F (26.7° C) or below; however, very little soil removal occurs in water under 60° F (15.0° C). Detergents, even those formulated for cold water, lose their cleaning ability below that temperature. About a 10° F (5.6° C) drop in temperature can be expected as hot water travels through the pipes and into

a cold washer. If your water heater is set to deliver water at 110° to 120° F (43.3° to 48.8° C), you would have to use the hot water setting on your washing to get water in the warm range. If you use the warm setting and mix 110° F (43.3° C) water with 40° F (4.5° C) cold water (as it could be in the winter), the wash water would only be 75° F (23.8° C) on the warm setting, and the clothes will probably not be as clean as you would like. Most washers use a 50/50 mix for warm water, but some new machines are using a 60 percent cold and 40 percent hot water mix. To check water temperature, hold a candy thermometer under the flow to determine the actual water temperature on each setting of your machine. Select the warmest water possible for the fabrics.

## Energy Conservation

Eighty-five to 90 percent of the energy used in doing laundry is for heating water. For a load washed in hot water with a cold rinse,  $\frac{1}{4}$  to  $\frac{1}{2}$  kwh of electricity is used to run the machine and about 5 kwh to heat the water. You can save energy by always using a cold water rinse, no matter what the wash water temperature. Rinsing is merely a dilution process; research shows that cold water is just as effective as hot. In addition, cold-water rinsing minimizes wrinkling in fabrics made from man-made fibers and those with crease-resistant finishes.

Using a cold rather than warm rinse will save about 2  $\frac{1}{2}$  kwh of electricity per load for water heating. If the clothes go into the dryer cold rather than warm, it does extend the drying time. However, research indicates this additional drying time only uses about .2 kwh more electricity, so a cold rinse still saves approximately 2 kwh for each load.

Presoaking clothing is another energy-saver. Laboratory testing has shown that a combination of a cold soak, followed by a warm wash cycle, provides cleaning equal to a hot water

wash. If you use this method, be sure the warm water setting on your machine provides water in the warm range—from 100° to 110° F (37.7° to 43.3° C) is best. Your hot water heater will probably have to be set at 140° F (60.0° C) to accomplish this.

Use the regular amount of detergent in both soak and wash cycles. Since some granular detergents do not dissolve completely in cold water, it may be best to use a liquid laundry detergent in the soak. A granular detergent should be pre-dissolved to gain full benefit from it.

In most cases a soak period of 30 minutes or less is sufficient. For a longer soak, increase the detergent slightly or use a special presoak product. It is important to have brief periods of agitation at the beginning of the soak to help dissolve detergent and during the soak to flex the fibers to remove loosened soil.

A cold soak with detergent is effective. Even though the soak solution is at a reduced temperature, there is enough time for the detergent to loosen the soil.

By adding detergent to both the soak and wash cycles, the detergent (chemical energy) is compensating for the reduction in wash water temperature (thermal energy).

Even though the best cleaning takes place in hot water, you can save energy by moving to warm or cold water washing. If you do, remember to compensate for the lower temperatures by such methods as presoaking, prespotting or increasing the agitation time. Some granular detergents do not dissolve well in cold water. Add them to the wash water first and thoroughly dissolve before adding clothes, or use liquid detergent for cold water laundering. Keep in mind that lower wash temperatures result in increased bacteria count remaining on the fabric at the end of the wash cycle. Ordinarily this is not a concern, but it may be advisable to use hot water or disinfect clothing when there is illness in the family, when washing infants' clothing

and when using public laundry facilities. In these situations, you can use chlorine bleach (if safe for the fabric) or other disinfectants.

## Water Hardness

The hardness of the water plays an important role in cleaning clothes. The harder the water, the more difficult the cleaning. Water hardness refers to minerals, primarily calcium and magnesium, that occur naturally in water. Water hardness is expressed in grains per gallon (gpg) or parts per million (ppm). In general, 0-3.5 grains per gallon (0-60 ppm) is considered soft; 3.6 to 7 gpg (61-120 ppm) is moderately hard; 7.1-10.5 gpg (120-180 ppm) is hard, and over 10.6 gpg (over 180 ppm) is very hard.

Although water hardness varies from one area to another (and from summer to winter) most areas in Kansas have hard to very hard water. Information on water hardness in your area should be available from the municipal water department or the county health department. If water hardness is creating laundry problems, you may want to consider adding a non-precipitating water softener to your wash and rinse water or installing a mechanical water softener. Water softener products are discussed in more detail in a later section.

## The Wash Cycle

Although some washing machines have only one wash cycle, many now have two or more. A regular cycle usually runs 10 to 15 minutes with a fast agitation speed. A permanent press or synthetic cycle is shorter, from 5 to 10 minutes, with slower agitation and spin speeds. Usually the permanent press cycle will rinse with cold water no matter where the temperature dial is set since this helps reduce wrinkles in permanent press clothing. A delicate cycle is short, 4 to 5 minutes, with a slow agitation and spin.

Use shorter wash periods and slower

speeds if abrasion of fabrics would cause pilling, and for delicate or loosely knit or woven fabrics. Use regular cycles for sturdy or heavily soiled clothes. Slower agitation and spinning results in less wrinkling of permanent press and synthetic clothing.

Longer wash periods and faster speeds remove more soil, but a soak period can compensate for a shorter wash period and slower agitation.

## Amount of Detergent or Soap

The days of suds overflowing the washing machine and covering the laundry room floor are gone. A much more common problem today is underuse. You may notice a gradual graying of clothing and general deterioration of appearance. This could be caused by soil buildup on the clothes because you're not using enough detergent or soap.

Detergents serve two main purposes: to loosen and remove soil from the clothes and to hold soil and lint in suspension in the wash water until it is drained away. If too little detergent is used, the clothing won't come clean and soil may be redeposited, showing up as tiny dark specks on clothing. If clothes are not getting clean, increase the amount of detergent.

Detergents differ in formulation and other characteristics, so it is important to read package directions. One significant difference is the density of the product. One powdered product may weigh only 2.5 ounces per cup, another may weigh 5 ounces and a third 8 ounces per cup. The heavier, denser or more concentrated the product, the smaller the volume (cup measure) of the product needed. To reduce packaging materials and storage space the current trend is to produce more concentrated laundry products.

The amount of suds produced can vary greatly from brand to brand, so suds level is not an indicator of the correct amount of detergent. If the recommended amount of a high-suds

product creates a suds problem, don't reduce the amount used. Instead, change to a controlled or low-sudsing detergent and use the recommended amount. Always read the package directions to get the best results from laundry products.

Remember that the amount recommended on the package is based on average washing conditions:

- an average load of clothes (5 to 7 lbs. or 2.3 to 3.2 K);
- average or moderate soil;
- average water hardness (3.4 to 7.0 gpg or 61 to 120 ppm);
- an average water fill (17 gallons (65 L) for top-loading and 8 gallons (30 L) for a front-loading automatic washer).

If any of these four items is not "average," change the amount of detergent used. For example, if your water is harder than average or clothes are very heavily soiled, increase the recommended amount. Less may be used for lightly soiled clothes. Automatic washers vary greatly in water capacity or fill—top loaders can range from 10 to 24 gallons (38-91 L) and front loaders from 8 to 10 gallons (30-38 L). Older top loaders had about a 16-gallon (61 L) capacity; newer large-capacity washers use up to 24 gallons (91 L). Many washers have settings that permit you to vary the amount of water. Determine how much water each setting uses and adjust the detergent accordingly, keeping in mind the amount suggested on the box is for 16–17 gallons (61-65 L).

Three kinds of energy are used to clean clothes: chemical (the detergent), thermal (water temperature) and mechanical (agitation speed and length of wash time). If one or more is reduced, poor cleaning results. To compensate, another energy source should be increased. For example, if you reduce thermal energy (changing from hot to warm or cold washing), the chemical energy (the detergent) should be increased.

Many of today's fabrics require a lower wash temperature, reduced wash

time or slower agitation to preserve colors and special finishes and reduce wrinkling. At the same time, it is difficult to remove soil from some synthetics. Many persons are also moving to warm or cold water laundering to save energy and reduce energy costs for heating hot water. These factors make it even more important to use an adequate amount of detergent to avoid soil buildup and redeposition of soil on clothing. They also explain why presoaking or prespotting stains, or both, has become a necessary laundry practice.

Graying of fabrics is usually the cumulative result of incomplete soil removal over an extended period of time. It could be caused by any or all of the following:

- too little detergent;
- overloading the washer;
- water is not hot enough;
- using soap with anything other than soft water (0-3 gpg);
- not presoaking (at least 30 minutes) heavily stained articles;
- incorrect sorting of clothes.

A process called "stripping" the fabric is often helpful in removing accumulated soil and restoring whiteness. For a 17-gallon (65 L) machine:

1. Fill the washer tub with the hottest water the clothes can take.
2. Add 1 to 2 cups of a nonprecipitating water conditioner such as Calgon or Spring Rain (more if water is very hard).
3. Add  $\frac{1}{4}$ – $\frac{1}{2}$  cup liquid or  $1\frac{1}{2}$ –2 cups powdered detergent. (To whiten clean clothes, omit detergent.)
4. Add clothes and run through complete wash and rinse cycles.

You will see dirty suds accumulating as the soil buildup is removed. These will then rinse away during the final rinse cycles.

## Laundry Products

*Soaps:* Soap, which has been used for centuries, is made basically from combining fat and alkali. Today's soaps usually have other ingredients

added and are available in either granular or flake form. Brand names include Ivory Snow, Dreft, Country Safe, Citrus Soap, and White King. Its major drawback is that soap combines with water hardness minerals to form a sticky, insoluble residue called soap scum or curd, or lime curd. This curd can build up as a residue on clothes that causes them to become gray, dingy and greasy feeling. It can also build up in the washer. For this reason, soap is not recommended in automatic washers unless the water is very soft (0 to 3 gpg). The problem of soap residue led to the development of laundry detergents, which today represent 95 percent of laundry washing products sold.

*Detergents:* It was not until after World War II that detergents became widely used in home laundry. Unlike soap, they do not form a curd in hard water and are satisfactory in any water and with all types of fabrics. For these reasons, detergents have essentially replaced soap for laundering. Although each company develops its own formula, all detergents have these basic ingredients:

- Surfactants (surface active agents)—improve the wetting action of the water; loosen and remove oil from the fabric; help to suspend soil in the wash water to prevent redeposition of soil.
- Builders—a product that inactivates water hardness (softens water) to increase cleaning efficiency; emulsifies grease and oil and holds soil in suspension; helps to maintain optimum alkalinity necessary for good cleaning. Although there are other types of builders, phosphates are still considered best for these functions.
- Anti-redeposition agents—help prevent loosened soil from settling back onto clothes.
- Brighteners or fluorescent whitening agents—fluorescent dyes make white fabrics appear whiter and colors brighter. They convert invisible ultraviolet rays from the sun or fluorescent light sources to visible light that makes fabrics look brighter.
- Corrosion inhibitors—protect

washer parts from corrosive effects of water and the washing solution.

- Suds control agents—control the amount of suds developed by the detergent.
- Fragrances—cover the odor of soils and the chemical odor of the product. Often designed to remain as a pleasant fragrance in clean clothing.
- Other ingredients—oxygen bleach, borax, enzymes, fabric softeners, opacifiers, and colorants.

Detergents are classified heavy duty (all purpose) or light duty performance and are available in both granular and liquid form.

### *Heavy Duty (all purpose products)*

Heavy duty products are suitable for all washable fabrics and in liquid form are particularly convenient for pre-treating grease spots and stains. Heavy duty (all purpose) detergents are further classified by sudsing action. These include:

- High sudsers — Ariel, Cheer, Lemon Dash, Tide, Oxydol.
- Controlled sudsers — Tide with Bleach, Liquid Ivory Snow, Ultra Oxydol Solo, Ultra Compact Tide, Liquid Lemon Dash, Dreft, Liquid Dreft, Era, Gain, Ultra Gain, Bold, Cheerfree, Liquid ALL, Wisk Concentrate, Surf Liquid and Powder.
- Low sudsers (developed for front loaders but work well in any type machine) — Liquid Cheer, Concentrated ALL.

### *Light Duty*

Light duty products are for delicate washable fabrics in automatic and hand washing. (Most hand dishwashing liquids can be used for hand washing delicate or lightly soiled items but should not be used in an automatic washer because they are high sudsing and do not contain corrosion inhibitors.) Light duty detergents include Dawn, Joy, Ivory Liquid, Dove, and Sunlight.



## Phosphate vs. Nonphosphate

It was mentioned earlier that phosphates are considered the best-performing builder in detergents. However, some years ago phosphates came under fire because it was believed they accelerate algae growth in lakes and rivers. Although many experts disagreed with the conclusion that eliminating phosphates detergents would solve the problem, some states (not Kansas) banned the use of phosphate detergents, and nearly all manufacturers have reduced the level of phosphates in their products. Although these reduced-phosphate detergents still perform well, it has become extremely important to use the correct amount of detergent and to increase the amount used for heavily soiled clothes, hard water or large loads. In general, powdered nonphosphate detergents do not clean as well as phosphate ones.

Carbonates are the most commonly used phosphate substitute in granular detergents. Unfortunately, they soften water by reacting with the hardness minerals to form small, insoluble particles called precipitate, which can build up on fabrics and washing machine parts. Clothes can become gray, stiff, and lose or change color. The buildup is difficult to remove and can damage machine parts and cause the finish of some flame-retardant fabrics to become ineffective. Although some nonphosphate granular detergents today are improved over those of a few years ago, the phosphate granular ones are still a better choice. Check labels for type of builder used.

Liquid detergents have the advantage of dissolving quickly, especially in cold water. They are also easier to use for prespotting soil and stains. Liquid nonphosphates do not cause precipitate buildup. They are made with more surfactant and no builder and do a good job of cleaning. They do not react to water hardness and leave no precipitate or deposit on fabric.

## Water Conditioners or Softeners

Water conditioners, precipitating or nonprecipitating, inactivate water hardness minerals that reduce the efficiency of the detergent. If you have very hard water or find your clothes are looking gray, you may want to add a nonprecipitating water conditioner to your wash and rinse water. A nonprecipitating water conditioner inactivates hardness minerals, holds them in suspension and provides alkalinity for effective cleaning. Examples are Calgon, Spring Rain and Blue Raindrops. These products should be added to the wash water before the detergent. Precipitating water softeners such as washing soda or sodium carbonate should not be used in an automatic washer. When added to hard water they form insoluble particles (precipitate) that can cling to fabrics and washer parts and leave a residue that is hard to remove. The water becomes cloudy because of the precipitate. (Water with nonprecipitating conditioners remains clear.)

## Detergent Boosters

Detergent “boosters” such as Axion or Miracle White were developed to increase the cleaning power of detergents. Since many contain water conditioners, there usually is no necessity for using both laundry aids. Formulas for “boosters” can contain any one or a combination of:

- water conditioners to soften water;
- borax to help control alkalinity and loosen soil;
- enzymes to dissolve protein stains;
- fluorescent whiteners;
- small amounts of surfactants or builders;
- corrosion inhibitors.

## Enzyme Presoaks

Enzyme presoak products such as Axion, Biz, and Trizyme are effective in removing protein-based stains such

as egg, blood or grass. They are not effective in removing oil-based stains. Enzyme products require time to work. For best results, soak in warm water for at least 1/2 hour; effectiveness is reduced in cold water or at temperatures above 140° F (60° C). The products can be safely used on all fibers (except silk and wool), with all detergents and with oxygen bleaches. Chlorine bleach destroys the enzyme action and should not be used with enzyme products, unless the bleach is added after the enzyme action is completed. In addition to enzymes, these granular products contain combinations of builders, surfactants, fluorescent brighteners, bluing agents, fragrances and possibly an oxygen bleach.

## Diaper Presoak Products

Borax is usually the basic ingredient in diaper presoak products. It is used by itself or with detergents and perfumes. Borax inhibits bacteria growth and ammonia odors while diapers are awaiting laundering.

## Fabric Softeners

Fabric softener leaves a residue on the fabric that makes it softer and fluffier, reduces static cling, imparts pleasing fragrances, reduces drying time and wrinkling, and makes ironing easier. Reduction of static cling also helps prevent lint from sticking to garments. There are two types available:

- Rinse-added fabric softeners (Downy, Snuggle, Final Touch)—These should only be used in the rinse cycle and should not be used with soap, detergent, bleach, bluing, or packaged water conditioners. They will react and cause a white, sticky residue on clothes which is sometimes mistaken for lint. They are available in concentrated form requiring 1 to 3 ounces (30 to 90 ml) per wash and in diluted form requiring 1/3 to 1/2 cup (80 to 120 ml) per wash depending on load size.

If your washer is equipped with a fabric softener dispenser, follow the directions in the instruction book, and the softener will be added automatically to the final rinse. If the washer does not have a dispenser, add the recommended amount of fabric softener to the rinse water as soon as agitation begins in the final rinse. Do not pour directly on clothes.

- Dryer-added fabric softeners (Downy, Bounce, Cling-Free, Snuggle, Free n' Soft)—Available as coated, nonwoven fabric or foam sheets to be put in the dryer with the clothes or as a pad to be fastened to the drum for multiple loads. Read and follow package directions. The sheet form often can be used for two or three loads. The solid is semi-permanently attached to the dryer, and is slowly absorbed by fabric surfaces as clothes come into contact with pad. One pad should last for 40–50 dryer loads.

Modern technology has made possible the combination of detergent and fabric softener in one product. Two such granular products are Bold 3 and Fab, and in liquid form Yes and Solo.

## Fabric Softener Buildup, Stains

Both wash- and rinse-added softeners are absorbed by fabrics, so the amount used must be adjusted to the size of the load, not to the amount of water in the tub. Dryer-added sheets should also be adjusted to the size of the load. Only half a sheet should be used with small loads.

Too much fabric softener will cause the clothes to appear yellow or dingy and feel greasy. It also makes the fabric less absorbent, which can diminish the effectiveness of towels and diapers and make clothing hot to wear. If this happens, omit softener every third or fourth laundering.

Too little detergent in the wash will prevent complete removal of the fabric softener, allowing a gradual buildup.

Avoid pouring rinse-added or wash-added fabric softener directly on the clothes. It will cause an oily, greasy-looking stain, but will not damage fabric. On rare occasions, dryer-added fabric softeners can cause small translucent spots or streaking on colored synthetics or blends, but it is not permanent. Fabric softener stains can be removed by rubbing the dampened stain with bar soap and rewashing the item.

## Prewash Spot and Stain Removers

Prewash spot removers – such as Spray-and-Wash, Shout, Clorox Pre-Wash, Faultless Spray Pre-Wash, and Miracle White Laundry Soil and Stain Remover – help loosen and remove soil during laundering. They are especially helpful on permanent-press garments and synthetics such as polyester that tends to hold oily stains. There are two kinds: a solvent type for oily or greasy stains and a surfactant type that works well on non-oily stains such as food or dirt. Read labels to determine which kind you are buying.

Solvent-based products usually list contents as “petroleum distillates,” “chlorinated hydrocarbons” or “perchloroethylene.” Grease solvents work very quickly; add treated items should be added to the wash water before the solvent evaporates. These products will work with any detergent in any water temperature, but occasionally in cold water, the prespotter may not completely rinse away and a faint stain will appear. If this happens, treat the stain with liquid detergent (or paste of powdered detergent) and rewash before drying in an automatic dryer where the stain might be set by the heat.

Follow label directions when using these products. Avoid spraying on table tops, washers or dryers because they may damage some plastics or painted surfaces.

## Bleaches

Bleaches help whiten fabrics and remove some heavy soils. Chlorine bleach provides a disinfectant action.

Chlorine bleaches, usually liquid, can be safely used on all washable fabrics except silk, wool, spandex, noncolorfast items, certain flame-retardant finishes, and fabrics treated with chlorine retentive finishes, such as permanent press. (Read care labels on clothes and all directions on the bleach container.)

Always follow the manufacturer's instructions for the amount of chlorine bleach to use. Since instructions are usually given as  $\frac{1}{8}$  cup for each 2 gallons of wash water, check the washer instructions to see how many gallons are used for each water level setting.

Improper use of chlorine bleach will damage fabrics. The damage may appear as rips, tears, or holes. It often will not appear for several launderings after the bleach has been improperly used. To avoid damage:

- Never allow undiluted chlorine bleach to come in direct contact with fabric.
- Always measure the amount used — don't guess.
- Use a bleach dispenser, if available. Add recommended amount of chlorine bleach to dispenser before loading washer with clothes, to prevent undiluted bleach from accidentally spilling onto fabrics.

If your washer does not have a bleach dispenser, dilute chlorine bleach as recommended (usually 1 cup to 1 gallon of water). After the washing action starts, lift the lid and pour the diluted bleach solution around the agitator. Close lid immediately and re-start washer.

Chlorine bleach can react with iron in hard water and cause yellow or pink stains. Test by adding 1 tablespoon chlorine bleach to 1 cup of hot water. If the water turns red or brown, it contains excessive iron, and you should use only oxygen bleaches.

If you're not sure whether chlorine

bleach can be safely used on a colored fabric, mix a solution of 1 tablespoon bleach and  $\frac{1}{4}$  cup water. Place 2 or 3 drops of this solution on an inconspicuous part of the garment; be sure it penetrates the fabric. If no color change occurs after 2 minutes, the bleach is safe to use.

*Caution:* Chlorine bleach is poisonous. It will cause burns or irritation if it comes in contact with the skin or eyes. Do not mix chlorine bleach and ammonia or products containing a strong acid, such as toilet bowl cleaners and rust removers. The fumes that result can cause serious injury or death. Observe label warnings.

Oxygen bleaches (usually powdered), while safe for all fabrics, are not as effective as chlorine types for removing stains and restoring whiteness. However, they help maintain whiteness if used on a regular basis. They may be added in recommended amounts with the detergent. Oxygen bleaches are most effective in hot water.

## Drying Clothes

Using an automatic dryer properly can save time and effort. Follow these pointers for best results.

- A correct washer load is also the right size dryer load; don't dry more than one washer load at a time. Overloading the dryer lessens the efficiency of the machine and prolongs drying time. It also results in uneven drying because proper tumbling action will not occur.

- Many of today's fabrics – such as permanent press, synthetics and blends of natural and synthetic fibers – perform better if washed and dried in slightly smaller loads. They need to tumble freely to smooth out wrinkles while drying. It is essential to remove these garments from the dryer immediately when tumbling stops; they will become wrinkled if left in the drum.

- Regular cycles may be used to dry sheets, towels, underwear and nonpermanent-press jeans.

- A permanent press cycle is best for synthetics, blends and permanent press clothing. This cycle has a longer cool-down period at the end of the drying time that helps avoid wrinkling. If your dryer does not have this cycle, lower or shut off the heat manually for the last 10 minutes of drying time.

- Read and follow care labels for correct drying temperatures.

- Dry lightweight and heavy clothing separately for even drying.

- Don't over-dry clothing to a "bone dry" condition. Clothes may become harsh and wrinkled if all natural moisture is removed. Fabrics, especially knits, can shrink if over-dried. It is normal for elastic bands in shorts, socks or bras to feel slightly damp when first removed from the dryer.

- Don't dry "lint-givers" and "lint-receivers" in the same load.

- Always keep the lint filter clean. If you don't, air flow will be reduced and drying time will increase.

## Line-Drying Clothes

Line-drying clothing is becoming more popular as a way to save energy. Sometimes, white articles are left out all day to benefit from the mild bleaching action of long exposure to

the sun. However, some fluorescent brighteners used on white fabrics are yellowed by prolonged sunlight exposure. White clothing containing fluorescent brighteners or colored clothing should be dried in the shade or brought in as soon as they are dry to avoid yellowing or sunfading.

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## Important Laundry Cautions

- Don't dry items containing foam rubber on a heat setting. When heated, these materials can, under certain circumstances, produce fire by spontaneous combustion.

- Do not place in a dryer any material on which you have used a cleaning solvent or which is saturated with flammable liquids or solids until all traces of the solvent or flammable materials and their fumes have been removed. This could include such products as acetone, denatured alcohol, some spot removers, gasoline, kero-

sene, turpentine and some waxes and wax removers.

- Never permit children to operate or play in, with or around washers and dryers.

- A flammable gas (hydrogen) can form in a hot water heater that has not been used for 2 weeks or more. If this is the case, to prevent injury or damage, run the hot water at the sink before starting the washer (or any appliance using hot water) to allow the gas to escape. Avoid smoking or placing an open flame near the faucet.

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