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EC261 Soap and other Detergents

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SOAP and other DETERGENTS FOR WASH DAY

Mary May Miller

TODAY'S HOUSEWIFE finds that long-established washing methods have to be changed because of the many new developments in home laundering. She has to learn how to use new types of equipment. New fabrics requiring special handling in laundering are a wash day problem. Old-time soap methods are giving way to use of new soaps, compounds, and water softeners. Knowing how to select and use the new equipment and detergents means easier wash days and fewer gray washes.

Just What Is A Detergent?

A detergent is a cleaning aid. Soap is a detergent and is always labeled "soap." Other laundry detergents, not so easily identified, are usually known as synthetic or compounded detergents. Although not so labeled, you can identify them by their advertising "no hard water scum," or "no water softener needed." The differences in laundry detergents depend upon the varying amounts and quality of the fats, alkalis, and other ingredients. A good detergent will hold loosened soil in suspension so that it will not settle on fabrics and cause tattle-tale gray.

Shopping for Detergents

You can get best results from a detergent only if you know how it will perform in the water to be used. The types of soil, fabric, and washing methods are other factors to be considered. For lightly soiled articles and for delicate fabrics you will look for a mild action detergent. For washing badly soiled, greasy articles, a hard-working detergent will be the answer. While soaps work best in soft or softened water, the cleansing action of most compounded detergents is not affected by hardness of water. Other considerations follow in this bulletin.

As a consumer you will be confronted by shelves loaded with detergents labeled with all sorts of instructions and recommendations for proper use. Read labels carefully, therefore, to find which detergents will best meet your laundering needs.

The right choice and use of detergents under your laundry conditions will save money and time and will mean easier wash days for you.

Soap Detergents

Cleansing Power of Soap

The detergent most familiar to you is soap, a product made from fat and lye. Soap is an efficient and economical detergent when used in soft or softened water. When used in hard water, much of it is wasted in softening the water before cleansing action can take place. Therefore, use a water softener if the water supply is hard. Doing so will save money and help to keep down soap scum.

Soap, strange to say, increases the wetting power of water. Water, alone, does not penetrate fabrics easily. The effectiveness of soap depends on maintenance of active suds to float the soil, keeping it from settling on clothes. Broken down suds permit the soil to collect on fabrics—thus a dingy wash is the result.

Types of Soap Detergents

You will find two types of soap detergents classified according to washing action:

1. **Unbuilt**—mild in action.
2. **Built**—the hard workers.

Unbuilt Soaps. These contain more than 90 per cent soap. They usually come in bead, flake, and granular forms that dissolve readily in warm or hot water. Unbuilt soaps, because of their mild action, are suitable for washing delicate fabrics: nylon, rayon, silk, and wool. A few examples of these mild soaps are: Chiffon, Ivory, Kirkmans Flakes, and Lux.

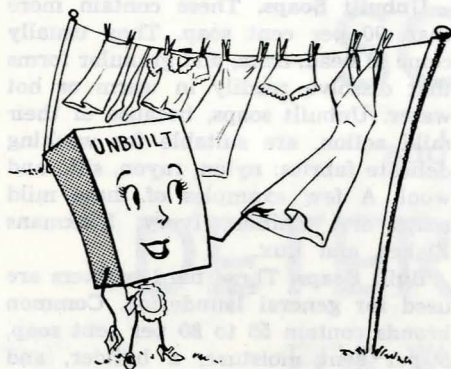
Built Soaps. These hard workers are used for general laundering. Common brands contain 55 to 80 per cent soap, 5 per cent moisture, a builder, and sometimes a whitener. The builder increases the cleansing action of soap and helps to keep down soap scum. If the label claims "whiter fabrics and brighter colors," the soap probably contains a new optical bleach or whitener.

These soaps are usually granular in form. Like unbuilt soaps, they should be used in soft or softened water to prevent a gray wash. Active suds are essential to good results. Examples of built soaps are: Duz, Fels Naptha, Hersheys, Oxydol, Perfex, Rinso, and Super Suds. These powdered soaps should not be confused with washing powders or soap powders. The latter contain only 10 to 15 per cent soap and are more suitable for heavy cleaning jobs about the house.

Compounded Detergents

Cleansing Power of Compounds

These detergents are made by a chemical process that is much more complicated than the reaction of fat and lye that makes soap. Chemists developed detergent compounds for cleaning and washing aids that would prevent the formation of scum when used in hard water. Compounds cleanse in hard or soft water and are usually effective in acid, alkaline, or neutral solutions.



The mild action of unbuilt detergents is best for delicate fabrics, but . . .

Types of Compounded Detergents

Like soaps, there are two types classified according to cleansing action.

Unbuilt Compounded Detergents.

Like the *unbuilt soaps*, these are suitable for laundering the fine fabrics. They suds quickly, even in hard water, and usually without scum. A few examples are: Breeze, Dreft, Trend, Swerl, and Vel. By experimenting with these and others, you will find the ones most effective for your types of soil and fabrics and condition of water supply.

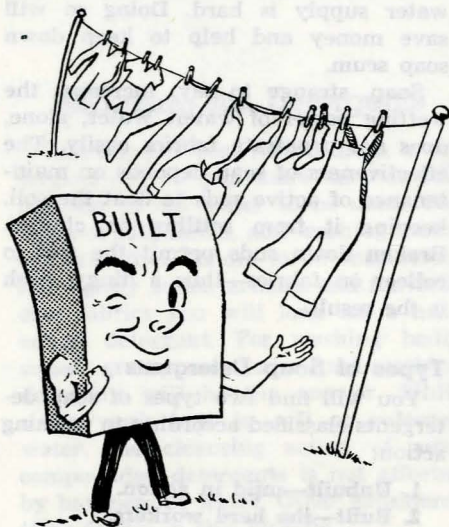
Built Compounded Detergents. Like built soaps, these are hard workers especially suitable for laundering badly soiled cottons and linens. They work best in hot water (140 degrees)—a temperature almost too hot for your hands. They contain builders which increase cleanability in hard water. "The **phosphate** built compounds are just as effective as soap in soft or softened water and are twice as effective as soap in hard water."¹ Several built compounds suds readily, others are practically sudsless.

¹Furry, Margaret S. *Soaps and Synthetic Detergents for Home Laundering of Cottons*, Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture. April, 1949.

Heavy Sudsing Compounded Detergents. These suds in soft or hard water. Like *soaps* because of the suds, these compounds are popular for use in wringer washers. A good two-inch suds is important for good performance. Although suds of compounds do not always hold up as long as suds of soap, cleansing action is said to continue. This may be due to the power of compounds to hold soil in suspension. A few examples are: Fab, Surf, and Tide. Experimenting with these and others will enable you to find the ones that will perform best under your laundering conditions.

Low Sudsing Compounded Detergents. These are designed for use in automatic washers. (Suds interfere with mechanical action and draining of automatic washers.) Since there are no suds to guide you as to amount needed, you will find it necessary to try varying amounts in your washer. Amounts are affected by type of soil and hardness of water. Follow manufacturer's instructions for best results. Examples are: All, Fun, Slec, and Spin.

. . . the hard workers—built detergents—are best for badly soiled cottons and linens.



USING DETERGENTS in the laundry

Effective cleansing depends on: heat, water, agitation (motion), and the correct amount and use of the detergent.

The Use of Detergents

Suds or No Suds? Soap and some of the compounds produce suds. This factor may be preferred by you who use a wringer-type washer and like to see active suds. Detergents work best in very hot water (140 degrees).

Hard or Soft Water? Soften the water if **soap** is to be used in order to keep down scum. Also, soften the **first rinse at least**, for it is in the first rinse that scum causes most trouble. The compounds usually are not affected by hard water.

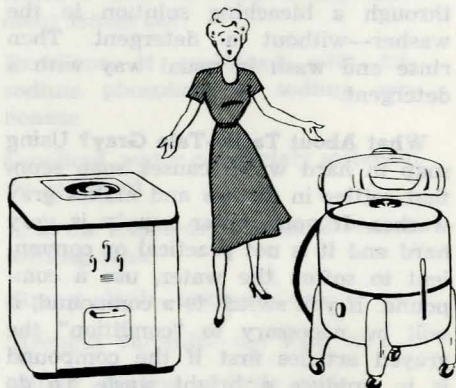
What Type of Washer? Although high sudsing detergents are suitable for wringer-type washers, low sudsing compounds are recommended for use in automatic washers—yes—and in dish washers too.

Unbuilts or Builts? Use unbuilt soaps or unbuilt compounds for the delicate fabrics—nylon, rayon, silk, and wool. Remember that the “builts” are hard workers, used to help cleanse badly soiled cottons and linens. Wash-day blues await you if you start a wash with one brand of detergent, then add a different one to the same wash water.

How Much Needed? A two-inch suds indicates correct amount of sudsing detergents. You will have to experiment with the **non-sudsing** because of differences in response to soil, condition of water, and washer action.



Measure—don't dump the detergent into your washing machine. Measure to make sure you have a 2-inch suds when you use a sudsing detergent.



Whether your washer is wringer-type or automatic, there is a right detergent for it: high sudsing for the wringer type and low sudsing for an automatic.



Do you have blue Mondays because of gray washes?

Preliminary Steps to Washing

Soak or Not to Soak? A twenty-minute soak in warm water softens the fabrics, loosening the soil. Tempering fabrics this way shortens the washing period and is a good practice before plunging them into hot wash water.

Bleach or Not to Bleach? This step may be necessary for improving the appearance of dish towels and similar articles. After doing the rest of the wash, try running soaked dish towels through a bleaching solution in the washer—without a detergent. Then rinse and wash in usual way with a detergent.

What About Tattle-Tale Gray? Using soap in hard water causes soap scum that settles in clothes and makes gray washes. If your water supply is very hard and it is not practical or convenient to soften the water, use a compound. If you switch to a compound, it will be necessary to "condition" the grayed articles first if the compound is to produce a bright wash. To do so, run the clothes through water softened with a Calgon-type softener (one that produces clear soft water with no sediment). The amount needed will

depend on hardness of water. Allow about 15 minutes for running time to loosen and suspend the soap scum that caused tattle-tale gray. Rinse. Remove from washer. Condition the washer the same way to remove scum from parts of washer. The clothes may then be washed with the compound.

Stain Removal. Since very hot water is essential for best use of detergents when laundering cottons and linens, it is essential first to remove stains that might be set by the hot water and detergent in the washer. For a chart on stain removal, write to the Bulletin Room, 3 Coffey Hall, University Farm, St. Paul 1.

Pre-treating Collars, Cuffs, etc. Dampen soiled areas and brush with dissolved detergent, using same brand of detergent you expect to use in the washer.

Washing Suggestions

Temperature of Wash Water. The following temperatures are now recommended for washing the various fabrics. Although the wetting power of a detergent is increased at very high temperatures of 140-160 degrees, the ability of a detergent to suspend soil (keep in solution) is said to be reduced. You may prefer, therefore, to use 130-140 degrees for fabrics and colors that can stand a high temperature. (First remove stains set by heat and detergents.)

The recommended temperatures are:²

| | |
|-------------------|-----------------------|
| White cottons | |
| and linens | 140 to 160 degrees F. |
| Partly colored | |
| shirtings, prints | 140 to 160 degrees F. |
| Colored cottons | 120 degrees F. |
| Rayons | 95 to 100 degrees F. |
| Woolens, silks | 90 to 100 degrees F. |

² Richardson, Jessie E. *Home Laundering*, Montana State College Bulletin 432. December, 1945.

The high temperatures, 140-160 degrees, are very hot to hands. Temperatures 90 to 100 degrees are considered luke warm.

Adding the Detergent. Many detergents tend to settle in a gummy mass without dissolving. For use in wringer-type washer, stir the measured detergent in warm water before putting into washer. Then agitate well before dropping clothes into the washer. It may be necessary to do the same for other washers if this is a problem.

The Washing Load. Washers operate best when small pieces are mixed with large—such as pillow slips with sheets. Over-loading prevents good action. Under-loading reduces desirable friction between articles—an aid to cleans-



Care in choosing a detergent and softener will assure you happy wash days.

ing. Follow the manufacturer's instructions regarding the water line and the load.

How Effective Are Water Softeners?³

Water softeners

1. Soap
2. Sodium carbonate
(washing soda crystals)
3. Trisodium phosphate
4. Tetrasodium pyrophosphate
5. Sodium hexametaphosphate—
alkalinized
6. Lime, slaked
7. Lye
8. Ammonia
9. Borax
10. Sodium bicarbonate
(baking soda)

Their qualities

- Expensive, produces sticky, gray curd with hard water
- Good, if amount, temperature, and time are controlled
- Good, if used correctly. Fluffy sediment settles out
- Excellent, if combined with trisodium phosphate or sodium carbonate
- Excellent, water completely softened, no sediment
- Acts on temporary hardness—needs settling tank
- Strong alkali—use with care
- Strength variable—use with care
- Mildly alkaline, of little value
- No value as water softener

³ Op. cit., p. 16.

The Washing Period. If the water temperature and the use of the detergent are controlled, the washing period will be $7\frac{1}{2}$ to 10 minutes, or occasionally 15. Prolonged washing may break down the suds and drive soil back into the clothes producing a gray wash. Timing is automatically controlled in many washers.

Temperature of Rinse Water. Moderately hot soft water (115-120 degrees) is important, for at least the first rinse. It is in the first rinse that soap scum is likely to form when soap has been used. A tight wringer and active sloshing up and down improve rinsing. Using a hand sudser (suction funnel) also improves rinsing.

Recent Laundering Tests

Tests with Wool. In hard water tests, textile chemists of the Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture, found compounded (synthetic) detergents got rid of more soil thoroughly than soap. **In soft water**, soaps and the milder compounded detergents were equally good

for washing wool. The hard working compounded detergents were more effective than either. (Only soil removal was studied in the tests. No effort was made to determine shrinkage and changes in color and strength that may occur in the fabric.)

Tests with Cotton. Recent tests support earlier tests on the efficiency of compounded detergents in hard water. Earlier tests showed that **in hard water**, compounded detergents removed more dirt from white cotton fabric than soaps. But **in soft water**, soap was found to be a better dirt chaser from cotton.

The superiority of compounded detergents in **hard water** and of soaps in **soft water** gets added backing from the new cotton research, which tested a different combination of oil, grease, and dirt. For effectiveness of **phosphate** built compounds, see page 4. Since clothing and other fabrics in every household get a wide variety of soil, the use of different soils makes the findings more reliable as a guide in home laundering. The chemists plan to continue these studies with other types of soil and fabrics.

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