

# How to Make LYE, the Key Ingredient to Soap Making

Over the years I have collected a wide variety of articles and books concerning country life, homesteading and the like. Of course being a Prepper, I paid particular attention to how to do this or make that for when I couldn't go to the store and purchase it. When I started to organize all this information into binders I bumped into a few questions that did not occur to me when I first collected and read the articles, yet alone when I practiced doing what was in them.

For instance, **if the SHTF and you can't go to the store or mail order lye, how on earth do you make soap?** Because of this I wanted to know how to make lye and how to make soap without additional lye.

**Then there are the benefits to making your own lye:** First, you save money and eliminate the costs of storage and transportation that you incur when you buy lye from stores. Second, you make something good out of an otherwise waste product like wood ash. Third, you grow brave enough to experiment with chemicals. Fourth, lye has a lot of uses, the foremost of which is soap making.

Yes there are methods to make "lye free" soap; however, this isn't really true. It's just that additional lye is not added to the recipe so the soap is very mild. Instead the recipe relies on the natural lye that forms when the various ingredients are mixed together. On top of that lye is caustic, harsh, very irritating to the skin and can do severe damage to eyes and throats. You need to be on your toes when working with it.

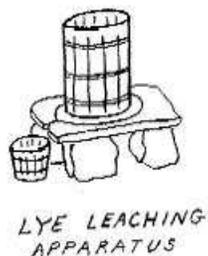
In fact when indoor plumbing evolved, lye was often used to unclog drains. Lye water may also be used for washing non-carpeted floors, followed by rinsing with cold clean water. The lye water will oxidize and sanitize the floor: any bacteria or insects will be killed. It can also be used to sanitize outhouses and latrines. Just be sure to wear rubber gloves and always use cold water to rinse, as hot water makes lye rather active.

Lye, also known as *NaOH*, *sodium hydroxide*, but in reality it is *potassium hydroxide* or *caustic soda* or *caustic potash*; all of which are *alkalis* and there's 10 times as much potassium as sodium in wood ash. This alkali reacts with fat to help form soft soap. Lye is also used in biodiesel fuel production, although the recipe will have to be adjusted somewhat.

Laboratory made lye was developed and produced in large quantities around the 1800's, soap on the other hand has been around for thousands of years and back then people made their own lye. The most common method was leaching water through wood ashes often called "Dripping Lye" or making "Lye Water".

## A Little Lye History

The lye solution was obtained by placing wood ashes in a bottomless barrel set on a stone slab with a groove and a lip carved in it. The stone in turn rested on a pile of rocks. To prevent the ashes from getting in the solution a layer of straw and small sticks was placed in the barrel then the ashes were put on top. The lye was produced by slowly pouring water over the ashes until a brownish liquid oozed out the bottom of the barrel. This solution of potash lye was collected by allowing it to flow into the groove around the stone slab and drip down into a clay vessel at the lip of the groove.



Some colonists used an ash hopper for the making of lye instead of the barrel method. The ash hopper was kept in a shed to protect the ashes from being leached unintentionally by a rain fall. Ashes were added periodically and water was poured over at intervals to insure a continuous supply of lye. The lye dripped into a collecting vessel located beneath the hopper.



The hardest part was in determining if the lye was of the correct strength. In order to learn this, the soap maker floated either a potato or an egg in the lye. If the object floated with a specified amount of its surface above the lye solution, the lye was declared fit for soap making. Most of the colonists felt that lye of the correct strength would float a potato or an egg with an area the size of a ninepence (about the size of a modern quarter) above the surface. To make a weaker lye stronger, the solution could either be boiled down more or the lye solution could be poured through a new batch of ashes. To make a solution weaker, water was added.

Overall the concept of making lye from wood is simple but the mechanism may require a bit of ingenuity and safety is of the utmost. Water must drip gently down through a container of wood ash to leach the lye out and produce Lye Water.

### Safety First

Handling chemicals is not an easy job and handling lye is no better. If you are in the habit of making soaps at home, you would probably know how to handle lye solution and maybe this is the right time for you to experiment making lye at home.



- You should always use rubber gloves and safety glasses when making or working with lye and it goes without saying that if you have young children that tend to “touch” before they ask, your lye and lye making should be out of sight and out of reach.

- Containers for ash, water and especially for lye water catchment, should be covered plastic buckets, wooden barrels, stainless steel (Lye can burn through some metals) containers or a fired clay pot-jar (not just dried in the sun). All should have tight, fitting and secure lids, especially the lye water containers.
- Never use lye containers for anything other than making and storing lye.
- Make sure that your lye containers have a stable foundation and are in a secure place where they cannot be knocked over by, for example, roving children, pets or other animals. Be sure to leave enough space beneath the barrel for the lye catchment container.
- To dispose of old leached ashes, dig a hole away from everything and pour the muck into it. Don't cover it until the ashes dry thoroughly.

### Ingredient Short List



**White Ash:** Hardwoods, like maple and oak generally provide the best potash for making lye, although the ashes may be made from any type of wood. Hardwood ash lye will make harder soap for bars and the best ash of all is from seaweed, such as kelp.

Kelp ash lye produces an extremely hard, durable soap. Ashes of burnt seaweed are particularly useful as these produce a sodium-based lye from which hard soap any one of a great variety of soaps, of different ingredients and color, which are hard and compact. The finest kelp ash in the world comes from the sea around the Falklands. Ashes from the burning of plants and leaves of trees may be used.

The completely dried and brown palm branches, banana peels and cocoa pods, may be used. Kapok tree wood, oak wood or for really white soap, apple tree wood make the best lye ashes. Of course ordinary wood used in cooking fires will do.

*Soft wood* ashes yield lye that will only produce soft soap. *Hardwoods* yield lye for hard soap bars.

*It is best to avoid ashes from pine, fir, other evergreens, paper, cloth and garbage.*

*Whatever wood is used, it should be burned in a very hot fire to make very white ashes.*



When cold, these should be stored in a covered plastic bucket, wooden barrel or stainless steel container. If these are not available, a clay pot-jar which has been fired in a pottery making kiln (not just dried in the sun) may be used.

**The next ingredient is Soft Water:** You will need at least 2-3 gallons depending on the size of the batch. Soft Water is useful for soap making, as there are no other chemicals in it, which would get in the way of making soap.

Water from a spring or from showers of rain is called "soft water", because it does not have metallic or acidic chemicals in it. If you run a dehumidifier, its collected water is an alternative to rainwater.

You can also use electrically distilled water. *The purer the water the more potassium that can be leached from the ashes.* Do not use bottled spring water or water from the tap! You can use bottled distilled water that was processed using steam distillation.

"Ordinary" bore, well or river water can be used for making soap, but this will sometimes need to have a "**washing soda**" or "**baking soda**" added to it. Otherwise some of the chemicals in the water will get in the way of making the soap.

*If you are using "ordinary" water and you want to test it to see if some soda needs to be added, simply try to make soap bubble up (foam) in it.*

If the soap easily foams up, the water is probably OK as it is.

If not, try adding a little bit of soda at a time stirring it to make it disappear, until the water will foam the soap up.

Then add the same amount of soda to the same amounts of the water that you wish to use to make the soap. For example, if you were testing a 1/4 (a quarter) of a bucket of water, and you ended up needing 1/8 (an eighth) of a cup of soda, then you would need 4/8 (or 1/2-half) a cup of soda for a full bucket of "ordinary" water.

Store the "soft water" in covered wooden, plastic, or stainless steel buckets or containers. (Again, a clay-jar as described above can be used if needed.)

**Lard** is another main ingredient in soap; one can successfully substitute other oils to use in its place. Possible substitutions for lard can be sunflower, canola or just vegetable oil as well as animal fats. Soap made from oil is often "greasier" than that made of lard. Lard can be purchased at a grocery store or a butcher shop or you can "Render your own Lard". (See Rendering LARD Cooking and Candle Makings Forgotten Skill.doc).

**Equipment Needed for Lye Making:**

- **A large, non-reactive container.**

Water will pass through ashes and straw in this container, to leech the lye from the ashes. Good options include a waterproof wooden barrel or a heavy-duty plastic bucket. No aluminum, please, as lye reacts with aluminum. We will call this the "lye making container".

- **Two more non-reactive, lye-proof containers.**

These will catch the lye as it drips out of the lye making container.

- **Rocks or gravel**

- **Straw or Hay**

The straw acts like a filter. It lets the lye-water pass through, while stopping the ash.

- **Hardwood ashes.**

These must be hardwood ashes, not soft woods, or you won't get usable lye. The ashes should be completely cool before using.

- **Soft water.**

This could be rain water, distilled water, or water from a dehumidifier. Tap water will work fine if you have soft water. Hard water (water with a high mineral content, making it difficult to work up a lather with soap or shampoo) won't work.

### Make and Collect the Ash

Burn your wood at a high temperature (fireplaces and wood stoves work great for this). The fire should reduce the wood to white ash. After the fire has cooled collect the white ash in a sealed container to keep it dry and uncontaminated. Store the wood ash until you have accumulated enough for your soap making needs.

### "Safe" Containers

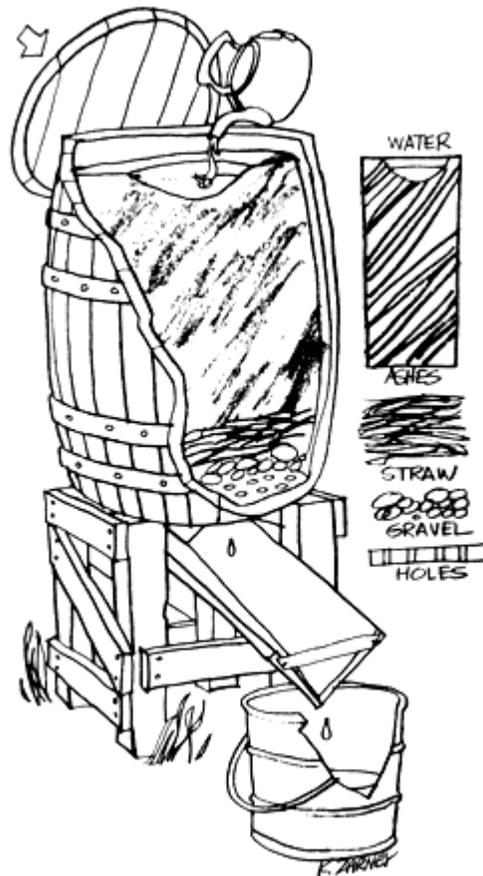
Any of the types of containers, buckets, barrels or jars described in the White Ashes or Soft Water sections are called "safe containers".

Do not use any metal in the fabrication, particularly a reactive metal such as aluminum, as lye really is "caustic," and will quickly eat right through many metal containers.

### Collect the Soft Water

Collect the water you are going to need and store. Be sure this marked accordingly so it is not used for other projects that don't need soft water.

### Leaching Container & Leaching



Place the wood ash in a container with a tap or other drain hole. This is your Leaching Barrel. Be sure to drill a hole about 2" above the bottom. Make sure you have a cork that will fit snugly into the hole.



Put some bricks down and place the barrel on top of them. The brick base must be stable. It raises the barrel up so that you can easily drain off the lye into a container when it is ready. Give yourself room to work.

Cover the bottom of the barrel with some palm-sized clean rocks (e.g. river rock). Cover the rocks with approximately 6" of straw (this can be hay or grass). This will filter the ashes and help your lye drain cleanly.

Add your cooled ash.

Put a pan under the hole and remove the cork. Pour a half bucket of hot soft water over the ash. Slowly add cool soft water until you see it start to drain into the pan, then put the cork back in tightly. Add more ash and soft water again until the ash floats. The water level should be about 6" from the top. Let stand overnight.

After a day, the first ash should settle and you can add more ash as need. Always let the ash settle for a minimum of 24 hours. Most experienced lye makers that I talked to recommend 3 or more days and state that you can add ash all week and drain it regularly on a specific day of the week.



Or you can make your leaching container by drilling a lot of holes in the bottom of a small wooden barrel and make sure it's waterproof before you drill the holes!

Stand the barrel on blocks leaving space beneath the barrel for a container. Use a waterproof wood or glass container.

Put a layer of gravel in the bottom of the barrel over the holes; then put a layer of straw over the gravel. Fill the rest of the barrel with ash, leaving a couple of inches at the top clear. Then pour rainwater into the barrel. After a long time (several days) the water in the barrel will start to drip into the container. Leave it until it stops dripping and then replace the container with another in case of odd drips.

Another method that combines new technology with old is to use a 10 foot length of plastic rain gutter, complete with a cap on one end and a down spout connection on the other end, and fasten it to fence posts about 4 feet off the ground. The down spout end should be about an inch lower than the capped end. Fill the gutter with an even layer of wood ashes, not tamped down or compacted. Water sprinkled on the ashes will filter out the lye and drip out the down spout end.

Under the down spout end of the rain gutter should be placed two plastic buckets. The bottom one collects the lye water, and should have a valve installed in the bottom to drain the lye water. The lid for the bottom bucket should have a half-dozen holes drilled in a circle about 6 inches from the middle of the lid, each hole being about  $\frac{1}{2}$ " in diameter. The bucket above that should have matching holes drilled into the bottom, so any lye water will run out the bottom, through the holes in the lid below, and collect in the bottom bucket. Straw is packed tightly into the top bucket, with its lid holding down the straw. In the lid for the filter bucket, cut a hole that matches the down spout, and place a length of down spout between the rain gutter and the bucket.



What you now have is an automatic lye water machine. Because the system is "closed," rain water cannot dilute the lye solution, but rain can be used as the source of water for the ashes, so lye water can be made in the winter. During heavy winter rains, a board can be placed over all but the first foot or so of the gutter, which will limit the amount of water intake and still allow what rain falls into the first foot to filter through all of the ashes to the exit down spout.

The straw in the filter bucket acts exactly as a filter, removing any contaminants and purifying the lye water.

Every part of the "automatic lye machine" listed above is made from plastic. Do not use any metal in the fabrication, particularly a reactive metal such as aluminum, as lye really is "caustic," and will quickly eat right through many metal containers.

### Check to see if your lye is ready

For what purpose are you leaching this lye - Body soap or heavy cleaning? Lye concentration gets stronger with each leaching.

For average soap making, you can use these measures: Drop a fist-sized potato or a raw egg into the barrel. If it floats enough for a quarter-size piece to rise above the water, it is ready. If it doesn't, you need to add more ashes or drain all the water and re-leach it (pour it back into the cask and let it set one more cycle).

### Lye Water Strength

If an egg or potato will float just below halfway, or a chicken feather starts to dissolve in it, then the lye water is at the right strength.

If the egg will not float, then the lye water could be boiled down if you want it to be stronger.

If the egg seems to pop up too far, add a little bit of soft water (a cup at a time) stirring the lye water, until the egg floats so that its head pops up.



### Drain and Store the Lye Water

Put your lye water container under the tap, gently pull the cork to drain out the brownish water and fill your containers. Leave enough head room so that they will be safe and easy to pour. This brownish liquid is the lye water used for traditional soap making and for other industrial uses.

To make stronger lye, like for unclogging drains, pour this water over the ash mixture again, let stand overnight and drain again.

After the lye water drains completely, add more cool water to the mixture and collect this weaker lye water in a different container.

Store your lye in a cool dark place until use and the sooner the better.

### **Lye Making Instructions – Down and Dirty Style**

1. Get the ingredients and equipments ready: You would need the following things to try your hand at making lye: two plastic buckets (a small one and a large one – the small one should fit into the large one in such a way that liquid from the small one drips slowly into the large one); some fresh ash from burning hard wood (you can even burn some hard wood to get this); gallons of rain water and a handful of straw.
2. Make a few holes in the small bucket. Better if the holes are tiny enough to allow only liquid stuff through. Check after you make holes by pouring some water through the bucket.
3. Now set the small bucket inside the large bucket. See to it that there is some space between the base of the small bucket and the large one. This is important as liquid should drip through holes drop by drop and not smudge the bottom of the small bucket.
4. Place the straw you have inside the small bucket and hide the holes with the straw. Lye water, when formed, will seep through the holes only through the straw. This would prevent other hard blocks of wood or ash from collecting directly into the large bucket.
5. Now place the wood ash above the straw and pour cold water over it. Ensure that the ash is above the straw and not directly near the holes. The straw base will act as a filter and prevent wood ash from flowing down with water.
6. As you pour the water slowly, you will see liquid lye dripping through the holes in the small bucket and getting collected in the large bucket.
7. Once all the water is poured onto ash, repeat the process with the liquid collected in the large bucket. Pour the collected lye solution onto the wood ash (above the straw) once again. Repeat and recycle the lye solution at least three times. This is done to concentrate the lye solution.
8. After repeating the process, you can collect the lye solution from the large bucket and store it in another plastic or wooden container and use it in soap making. Avoid metal utensils as it can result in increase in temperature of lye.
9. Before storing lye, test its strength. In olden days, people tested lye with fresh egg. If a fresh egg floats near the surface of the solution with a little lye water above it, your lye is of right strength. If the same egg drowned, your lye lacks strength. If the egg floated above the solution, then it is too strong.
10. If your lye lacks strength, add more wood ash and repeat the process with the same solution. If it is too strong, add water and check the strength with the egg again. You can keep adding water till you are certain that your lye is of the appropriate strength.

### **Cold Soap Recipe – Shortest Version I could find**

1/2 ounce of, 1/4 cup cold water, 1/2 cup lukewarm fat (lard)

Stir lye into cold water with a wooden spoon; slowly add lukewarm fat; stir until thick.

Pour into plastic mold and cover with plastic wrap for 24 hours, remove from mold and allow to air dry.

## Related Information

To Build a Simple Rain Barrel see <http://www.wikihow.com/Build-a-Simple-Rain-Collection-System>

For a Video on Making Lye see [http://www.youtube.com/watch?v=gqe\\_LVp1iUY](http://www.youtube.com/watch?v=gqe_LVp1iUY)

For great Lye Leaching Instructions and images see:

<http://www.countryfarm-lifestyles.com/make-lye.html>

<http://hubpages.com/hub/Lye-from-Wood-Ashes>

<http://soap-made-easy.com/make-lye.html>

<http://woodridge.wordpress.com/2010/03/06/making-lye/>

<http://www.iwastaken.com/forum/survival-information/how-make-lye-wood-ash-1305.html>

<http://www.thefreelibrary.com/How+to+make+lye-a0169961812>

<http://www.supersoapmaking.com/how-to-make-lye-for-soap-making.html>

6 Must Know Things About Lye <http://sodium-hydroxide.com/why-you-cant-do-without-it-6-must-know-things-about-lye>

See "Using Salts To Produce Lye" <http://www.green-planet-solar-energy.com/make-lye.html>

A great Soap Making site with tons of "recipes" is Miller's Soap <http://www.millersoap.com/>

If, in addition to information about making soap you need to know about self-reliance, preparedness, survivalism, camping, food storage, cooking and grilling...this is your site. Even includes some pioneer saga! Rogue Turtle's Guide To Soap Making <http://www.rogueturtle.com/articles/soap.php>

## Also see what else I have posted to the web:

<http://www.scribd.com/TNTCrazyLady>

For how to render your own lard for soap and candle making see *Rendering LARD Cooking and Candle Makings Forgotten Skill* on scribd.com.

*"By failing to prepare you are preparing to fail."  
Benjamin Franklin*

**TNT**

**A 50 Something, homesteading, Prepper ;-}**