

PRISON ALCOHOL TECHNIQUES AND RECIPES

There are two main types of prison alcohol: pruno and lightning.

Pruno is far more common and much easier to make. It's essentially prison wine.

Lightning has been referred to as prison whiskey, but really prison moonshine is much more accurate.

Prison wine (pruno), just like wine on the outside, can be of the delectable \$100 a bottle variety, or the \$2 rotgut variety; it all depends on how good the guy who's making it is (though the latter is more common). Rarely are two batches of pruno exactly the same, but here's an abbreviated how-to (If you want a very detailed and very funny description I recommend checking out Eric Gillin's post at [The Black Table](#)):

- Inmates save a bunch of fruit such as apples, pears, peaches, they get from their bag lunches. They stockpile for a while, or get some friends in on it.
- They mash those up as best they can, and put them in plastic bags (which are provided to inmates). By some accounts they let the fruit rot first. Sweet Jesus.
- They add in any other sweetening ingredients they can find. Powdered drink mix, sugar, canned fruit cocktail, even ketchup. That's right. Ketchup. I'm sure a master pruno chef would never, but then what do I know?
- The magic ingredient they add is bread. Why? Because it has yeast in it. They toss in a handful of slices (depending how big the batch is), and that yeast gets to work lapping up that sugar and peeing out alcohol.
- They heat the bag as much as they can with warm water from their sink or hotpot, but generally they just leave it sealed in a dark place. There is a lot of off-gassing in during this process, so they have to "burp" the bags on a regular basis or they'll burst. Living in a tiny cell that reeks of rotting fruit is even less fun than regular living in a tiny cell.
- They let these bags ferment for three to five days (or a week or two, depending who you ask).
- Once they think it's done they strain out the solids using a shirt or socks, and there you go, prison wine. I heard the taste described as "rancid," "vomitous," and "like alcoholic bile." Sounds like a treat. I'm guessing that's not the work of a master pruno-smith, though.

According to Officer Eric Patao, they find bags of pruno on a weekly basis:

We usually do sweeps around the holidays. Some of these fools have straight up liquor stores. Inmates will come by cells with a cup and pay a few dollars a cup. Inmates will have a box rigged on top of their lockers and have a tube fixed to the bag. They basically use gravity and the tube to serve it up. People on the outside think 'Who cares? No big deal.' However, a handfull of these guys are not friendly drunks.

They get into fights with other inmates or officers. Officers responding to a drunk inmate may get hurt in the process. Just like anything that impairs a person, they lose judgment, and crime follows. Especially when you have thousands of felons corralled together.

Pruno is generally 2 to 14-percent alcohol, again depending on who makes it. Lightning, on the other hand, can be around 80-percent (that's twice as strong as most whiskeys or vodkas). Luckily it's also far more rare. In seven years at San Quentin Officer Patao can only remember seeing lightning (sometimes called white lightning) twice. It's much harder to make.

Basically guys have to be able to build a mini-still in their cells and not get caught doing it. That ain't easy to do. They need a container of pruno, all ready to go, and a heat source (generally a hotpot). Then using various pilfered supplies, they have to seal the pruno off, heat it, run the vapor through a tube of some sort, and have it come out in a second container. It takes a long time, and while these guys have time aplenty, officers regularly patrol the corridors and it can't be easy to hide something like this, if only because of the smell of heated pruno.

Both of these libations are extremely dangerous, but for different reasons. Lightning is dangerous because it's so insanely strong. Half a cup can get a very large felon blackout drunk, which is obviously bad for a number of reasons. Pruno is dangerous because, essentially, you're drinking rotting fruit, which is liable to have all kinds of mold, bacteria, and other pathogens. Best case scenario with pruno is you get a bad case of the shits and a roaring hangover. Worst case, you could end up in the hospital and die.

MAKE YOUR OWN PRUNO AND MAY GOD HAVE MERCY ON YOUR SOUL.

By Eric Gillin

09.24.03

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Pruno, a prison wine created from fruit, sugar and ketchup, is such a vile and despicable beast in the California state penal system that prisoners can't eat fresh fruit at lunch.

Back in December 2002, the warden at Lancaster prison in Los Angeles County removed fresh fruit from box lunches in the maximum-security lockup, as an effort to reduce violence. Apparently, sober, scurvy-addled felons are much easier to control than drunken, violent convicts.

So, perhaps this plan is flawed. And perhaps it's also worth noting that exactly one year earlier at a different L.A. County prison -- the Peter J. Pitchess Detention Center in Santa Clarita Valley -- hatched

a scheme to let inmates pick grapes at a winery and shag golf balls at a local driving range. While the County's effort to combat pruno are suspect, there's no deny that pruno is a huge problem, increasing the levels of violence and allowing convicts to continue their bad habits while in prison.

In the first 270 days of 2002, staff at Lancaster prison were assaulted 102 times -- about once every three days.

By most accounts, pruno isn't something a normal human would want to drink, so potent that two gallons is said to be "a virtual liquor store," enough to get a dozen people mindblowingly wasted. And while it tastes so putrid that even hardened



Even people who have never had any trouble with the law can learn to make this horrible, putrid beverage!

prisoners gulp it down while holding their noses, they'll go to incredible lengths to make it, whipping up batches from frosting, yams, raisins and damn near everything.

What's all this fuss about? The Black Table decided to investigate.

The Recipe For Prison Pruno*

* -- derived from the Jarvis Masters poem of the same name -- [SEE SIDEBAR.](#)

The Ingredients.



- **Ten oranges.** In our prison commissary, Valencia oranges were on sale, ten for \$2. Your prison commissary may differ.
- **An eight ounce can of fruit cocktail.** In this case, an 8.5 ounce can of Del Monte's "fruit cocktail in heavy syrup," for 90 cents.
- **Forty to sixty sugarcubes.** Either hang out with old people who still use sugarcubes or steal a ton of sugar packets from the local deli.
- **Sixteen ounces of water.** Tap is fine, since like, you *are* in prison.
- **A big plastic bag that can be sealed.** Trashbags and rubber bands are totally cool. We used Ziploc bags.
- **Some ketchup.** Six packets of ketchup from the local deli should cover things nicely. Please use Heinz, because anything else is kinda nasty and will ruin your Pruno.
- **A towel.**

STEP ONE -- PEEL, SMASH AND HEAT.

In a *San Francisco Chronicle* article from 1990 called "The Games Guards Play," author Dannie Martin describes how prison guards -- or hacks -- would search prison cells for any sign of pruno. But instead of taking it away, the hacks who were really hell-bent on getting even would piss in it. As Martin quips, "Wine that has been urinated in several times is far too presumptuous, even for a convict's palate."

Several times? So, like, you could piss in it *once* and some people just wouldn't notice, or wouldn't care, and they'd drink it anyway? Pruno is vile. Perhaps it's the vilest beverage ever concocted. Time to see how the other half lives.

REMEMBER TO FEEL THE HATE.

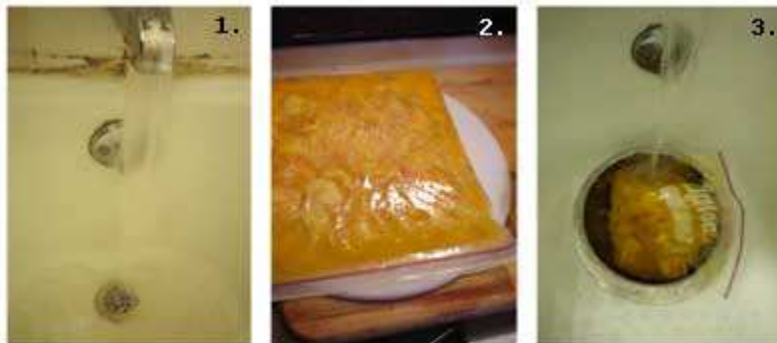
1. Toss the oranges into the Ziploc bag. **2.** Open the can of fruit cocktail and dump it into the bag, along with your own emotional cocktail of nihilism, depression and crippling boredom. **3.** Mash them furiously, feeling the anger of being unjustly sentenced to hellish bourgeois existence of cable television and suburban shopping malls. **4.** Squeeze in



a state of frenzied self-involvement.

You now have a big bag of gushy fruit. In order to take that fruit to the next level, you're going to need to heat it up to get the process going. But prison cells aren't outfitted like the local Crate and Barrel, so you're going to use hot water to warm the bag enough to get it up. to snuff.

DROWNING YOUR SORROWS.



1. Go run the hot water in your bathtub. **2.** Now that the fruit has been beaten to a pulp, throw in sixteen ounces of water and mingle together. Double check that Ziploc seal to ensure you don't spill orange goo all over the place. As the water begins to steam, allow the sneaking feeling that you'll never amount to anything run down your spine. **3.** Place the bag under the tap for 15 minutes to heat it up.

BE PATIENT AND SLIGHTLY PARANOID.



1. You will now have a large, ominous Ziploc bag of warm crap. **2.** Take the pruno, tenderly, like a proud parent of a newborn and wrap it in a towel, so it can stay warm and speed along the fermentation process. **3.** Stash "Baby Pruno" extremely well, so none of the authority figures in your life will start asking questions and have to be shanked later on. Once your bag of festering fruit is hidden, wait 48 hours while constantly paranoid someone will find your pruno and steal it. Accuse everyone. Refuse to sleep.

STEP TWO: A SPOONFUL OF SUGAR.

After 48 hours of sitting in a warm place, that bag of mashed fruit will attempt to become a crud-filled beach ball, as the gases released from the start of the fermentation process swell the plastic bag.

Once the bag is opened, you'll immediately smell something yeasty and foul, like bread dough that's been raised on the mean streets of South Central. This smell is a good thing. It means you're ready to feed your pruno.

To speed along the fermentation and also to impart a better taste, you're going to have to add something sweet to the mix.

1. This means it's ketchup and sugar time! After you've befreinded that old person and raided the local Burger King, **2.** add two big old squirts of ketchup **3.** and 50 sugar cubes. Swish around the ketchup and sugar a bit, which will give the pruno a reddish tint, then go run that hot water. Stinky Baby Pruno needs a bath. Real bad. **4.** Instead of 15, run the pulp under the faucet for a full 30 minutes to ensure the sugar is fully absorbed into the fermenting fruit juice. **5.** After heating the bag, wrap it up again -- we used a bigger towel for our



Baby Pruno is smelly-welly.



growing Baby. **6.** Remember this image, for it is the last time you'll see Baby for three days.

STEP THREE: RINSE, LATHER, HEAT, REPEAT.

With the sugar feeding the fermentation process, Baby Pruno will continue to give off gas as alcohol is produced. Make sure to keep a close eye on Baby Pruno, because if you're not careful, the bag holding Baby Pruno will pop, letting nasty orange pulp and mushy fruit cocktail seep all over the place. This happened when we were making pruno and the apartment smelled like Newark for three days.

Now that everything's together, all you have to do is wait, heating the bag up under hot water for 15 minutes once a day for the next three days. Once you're done with this last push, the pruno is "ready" to drink.

THE HOME STRETCH



The last three days of pruno making are not very strenuous, but in the spirit of providing complete, easy-to-follow

directions, we present the final steps. **1.** Heat the bag. **2.** Wait a day. **3.** Heat the bag. **4.** Wait a day. **5.** Heat the bag. **6.** Wait a day. **7.** Prepare to die.

Since it's a reflective moment, what with you preparing to die and saying your prayers and all, lets take a look back on the pruno making process and celebrate your considerable achievements. Below you can find, the Prunar Calendar, which outlines the entire process you've gone through. Look at all that waiting you did between steps! Well, the wait is almost over.

The Prunar Calendar

SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
	STEP ONE.		STEP TWO.			STEP THREE. HEAT!
HEAT!	HEAT!	DRINK! 				

STEP FOUR: CUT THE CRAP, LEAVE THE JUICE.

All of the hard work is just about finished now and rivers of illicit -- and possibly toxic -- prison hooch await you. The final step merely involves separating the rotting fruit from the quasi-alcoholic juice, and it smells. Oh lord, does it smell.

1. After a week's worth of being heated up and wrapped in a towel, your pruno will be a mushy bag of fruit glop. 2. As this picture shows, pruno looks almost exactly like vomit. Oddly it smells like vomit, too. 3. Spoon out the fruit mash, leaving behind only the liquid. 4. You middle-class wannabe felons can use a strainer to ensure none of the fruit remains slip into the beverage. 5. Of course, this strainer does little to stop the mold, which you can see in that white splotch right there. 6. Without the fruit you will have



enough pruno left over to fill about two pint glasses.

STEP FIVE: TIME FOR A LITTLE ROMANCE, NO?

There's nothing quite like a hand-crafted vintage of pruno to get those embers of lust burning bright. Ask that little prison bitch you've had your eye on to split one of these with you and he'll be tossing

salads like the caterer at a weight-loss convention.



Pruno does, in fact, seem to have some kind of alcoholic content. An odd burning sensation accompanies the first sip and the liquid gives off the tell-tale stink of booze goodness. In a place where violence is common and household cleaners double as anti-depressants, you can see why pruno is so very popular.

The only drawback pruno has, aside from its unappealing tannish-orange color, the white flecks of mold floating on the top and the smell you can't wash off, is its taste. For lack of a better

metaphor, pruno tastes like a bile flavored wine cooler. It tastes so bad, in fact, that it could very well be poisonous or psychedelic, which might explain the violence it induces in prisoners.

In the end, pruno stands as testament to the lengths man will go to in order to suckle on freedom's teat, even if it means getting food poisoning in the process.

Alcohol has been with us since the beginning of civilization, in the best and worst of circumstances.

It has survived countless attempts to limit and ban it and, through man's ingenuity, it has prevailed. No matter what the situation, men have always found a way to beg, borrow, steal or manufacture their own alcohol. Nowhere is this irrepressible spirit more evident than in prison. Which makes sense. Alcohol is great for stress, after all, and there are fewer stressful environments than lockup.

Homemade prison alcohol goes by the a multitude of names, including juice, jump, raisin jack, brew, chalk, buck, hooch, and pruno (a once popular ingredient was prunes, but the name now applies to any fruit-based homebrew), and the industry probably started flourishing about a week after history's first prisoner was led to his cell. And try as they may, the Man has never been able to stop it. It's become such an entrenched part of the culture of incarceration many wardens have accepted it as part of the gig.

Reggie Kray, of the Kray brothers, England's most infamous crime family, was recently denied parole after 29 years in prison because "he had failed to refrain from drinking alcohol in prison." He refuses to stop and the authorities apparently can't make him. So he remains in prison.

Drinking.

It's nearly impossible to stop because, one, the prisoners will go to great lengths to get it, and two, alcohol is remarkably easy to make. All you need is a little knowledge, something that will ferment, and time. And there's plenty of all three in any prison. Most recipes involve fresh fruit and wardens at some prisons have went so far as to ban fruit from prisoners' meals in hopes of curtailing production. The convicts, ever resourceful, were later found to be making pruno from cake frosting, bread, jelly and milk. Which goes to prove, where there's a will, there's a way to get smashed.

To discover how easy it is to make pruno, we assembled two teams to attempt separate recipes. The first is a proven classic, the second a modern variation.

Recipe #1: Classic Pruno (by Hank Soboski)

This recipe is part of prison folklore to the extent it was described in detail in a famous poem called *Recipe For Prison Pruno* by prison poet Jarvis Masters. (*See bottom of page.*) Using nothing but the poem for reference, I proceeded.

What You'll Need:

A Sealable Bag (Ziploc or a heavy-duty garbage bag with rubber bands)

10 Peeled Oranges

1 8oz Can of Fruit Cocktail

50 Sugar Cubes

6 Teaspoons of Ketchup

Tap Water

Day 1

I combined the oranges and fruit cocktail in a large Ziploc bag, sealed it tightly, then spent fifteen minutes squeezing and mashing it lovingly until it was the consistency of a pulpy paste. I added 16 ounces of tap water and resealed the bag.

I ran hot water over the bag for fifteen minutes, then wrapped it in three towels to insulate the heat and start the fermentation process. The bag ends up being the size, weight and temperature of a newborn infant and you may start having tender feelings for the cute little beast. This is normal. Especially when this realize when this baby grows up he's going to get you drunk. I hid my baby in safe, dark place and let it sit undisturbed for forty-eight hours.

Day 3

I unwrapped the towels to discover my baby had ballooned up nicely. This, I surmised, was due to the gasses given off by the fermentation process. I opened the bag and it gave off a light scent of, well, rotting fruit. I added fifty cubes of sugar and six packets of Heinz Ketchup. After resealing the bag, I waited for the sugar cubes to dissolve, then kneaded the pulp a little to ensure a good mix. It struck me that I could

have very well used uncubed sugar. I ran it under hot water for thirty minutes to make things pleasant for the bacteria, then rewrapped my baby in towels and put it back in a safe dark, place.

Day 4 and Day 5

I kept a close eye on my prodigy. The sugar accelerated the fermentation process and by Day Five it looked as if my baby was thinking about exploding into something I didn't care to clean up. I opened a corner of the bag and let off a little gas.

Day 6 through Day 8

I reheated the bag in the sink for fifteen minutes every day, then rewrapped it in towels. I noticed a floating colony of mold that had taken up residence was growing very nicely. Was my baby sick? Was this normal? Was there no hotline I could call? I put it back in its safe place and hoped for the best.

Day 9

Gripped by a mixture of anticipation and dread, I unwrapped the bag and opened it. As a precaution, I had scented toilet paper stuffed up my nose, but the bouquet still came on like a rotten gauntlet across the snout. My baby had mutated into some form of Frankenstein creature with very bad personal hygiene. I quickly ladled out the large pieces of rotten fruit and the spectacularly successful mold colony, then strained the remainder through a tea strainer.

The Taste Test

I had to fight hundreds of thousands of years of human evolution and instinct to get down the first swallow. Even with my nose stuffed with toilet paper, my first instinct was to vomit out what my lizard brain told me was deadly poison.

But I remembered that I reacted the same way to my first taste of whiskey and carried on. I fended off the idea of mixing it—with drain cleaner, gasoline, anything.

I forced down a cup's worth, expecting it to eventually get easier. It didn't. Each new swallow was a fresh insult. I added ice in hopes it would mask the taste or at least kill some of the bacteria. Aside from tasting like moldy and rotted fruit, it tingled against my tongue as vast bacteria colonies rose up and counter-attacked.

When I'd fought and gagged my way through half the first pint, my stomach started rebelling. I could imagine what it was thinking: "Great God, we're being poisoned! And, get a load of this shit, the fucker keeps sending more down! Are we committing suicide? Did I miss a fucking meeting?"

To put it bluntly, classic pruno tastes like a bottle of Thunderbird filtered through a dumpster full of rotted garbage. Also, a stray dog laps it up from the alley floor and vomits it into a dirty hubcap.

Did it get me drunk? A pint of pruno earned me a mild buzz. Not a "snifter of brandy on the balcony" buzz. But rather a wretched, stomach-churning, sour-mouthed buzz. The equivalent of back alley sex with a toothless crack whore. It's sex, yes, but you feel more horrified than satisfied.

I've never felt a great deal of sympathy for our nation's prisoners, but I do now.

Recipe #2: Rich's Orange Jack (by Nick Plumber)

I acquired this recipe from a recently paroled friend of mine, Rich, who'd experimented extensively with cellbrewing while serving out his debt to society.

What You'll Need:

A Sealable Bag
3 Containers of Orange Juice Concentrate
1 1/2 Cups of Sugar
3 Dinner Rolls
Tap Water

Day 1



Nick revels in Orange Jack's delightful bouquet.

The dinner rolls, Rich informed me, are added for their yeast content, which explains why this recipe takes a third less time than the classic version. While incarcerated he'd mixed this mash in a trash bag ensconced inside a plastic jailhouse footlocker. Lacking such, I used a trash bag and a five-gallon plastic bucket. I combined all the ingredients and I tied off the bag leaving plenty of room for the gasses to expand into. According to Rich's system I would let it sit for five days, "burping" the bag once a day to let off the gasses. Rich suggests that the best time to do this is right after lights out, since the guards won't be by for a while and the odor of fermenting juice is pungent and unmistakable.

Day 2

I didn't notice much activity. The bag wasn't filling up with carbon dioxide and I fretted that I hadn't added enough sugar to get the yeast kick started. I decided to be patient.

Day 3

The bag was slightly swelled, but not enough for me to burp it.

Day 4

The bag was starting to bloat, so I opened it slightly and squeezed. A strong smell, like a screwdriver with the hint of rising bread, filled the room. According to Rich, this was a *good* sign.

Day 5

I burped the bag again. The odor was getting *very* sour. Rich had warned me of this, so I added another ½ cup of sugar and retied the bag.

Day 6

The moment of truth. I assembled a panel of tasters, opened the bag and peeked inside. A foamy mess of soggy bread floated on top of a thick orange liquid. In the interest of keeping the procedure as authentic as possible, we strained the brew through an old t-shirt. We served it on the rocks with a twist of morbid dread.



The moment of truth: Nick ladles out the rotted fruit of his labors.

The Taste Test

Ivan, after smelling it, refused to drink it until we called his manhood into question. He had a sip, ran straight to the bathroom and threw up.

Not a good sign, to be sure, but the rest of us were made of sterner stuff. It smelled like rotten underwear and looked like Satan's venereal urine, but this was for drunkard science, by God.

Counting to three, the remaining tasters and I took a drink simultaneously. We grimaced in unison. It tasted exactly as bad as it looked and smelled. Like a screwdriver that'd been sitting in the sun for a week. Baker put his down and refused to have

another drink. Dignan took one more tiny sip, shuddered and surrendered.



Nick reacts to his first taste of Orange Jack.

Which left it all up to me. Bracing myself, I downed the rest of the glass. Remarkably, it stayed down. I sensed that there was a decent amount of alcohol in it but was there enough to give the kind of buzz that would make me forget a five to ten year stretch of hard time?

Snearing with disdain at the shattered panel of tasters, I calmly filled another glass. In the big house they would all be my bitches. I added more ice and let it sit for a moment— chilling it could only help. I tried to put myself in the mental state of a prisoner: *I haven't had a drink in months or longer, and this is all there is. There are no liquor stores, no bars, no bottles of scotch hidden under my roommate's bed. Nothing. Just monotony, brooding danger and a powerful urge to get out of my head, even for just an hour.*

I expelled all my breath and sucked down another glass. Vinegary, yeasty, with a rusty shank of an aftertaste. I was feeling a slight buzz, but I didn't think I could stomach another glass. It was booze all right, but two glasses was my non-incarcerated limit.

To reward myself I poured a nice glass of whiskey to wash my mouth out and ruminated upon the experiment: It works, yes, but I wouldn't recommend trying it in any but the most desperate of conditions.

--Nick Plumber

Recipe For Prison Pruno

A poem by Jarvis Masters

Take ten peeled oranges,
Jarvis Masters, it is the judgment and sentence of this court,
one 8 oz. bowl of fruit cocktail,
that the charged information was true,
squeeze the fruit into a small plastic bag,
and the jury having previously, on said date,
and put the juice along with the mash inside,
found that the penalty shall be death,
add 16 oz. of water and seal the bag tightly.
and this Court having, on August 20, 1991,
Place the bag into your sink,

denied your motion for a new trial,
and heat it with hot running water for 15 minutes.
it is the order of this Court that you suffer death,
wrap towels around the bag to keep it warm for fermentation.
said penalty to be inflicted within the walls of San Quentin,
Stash the bag in your cell undisturbed for 48 hours.
at which place you shall be put to death,
When the time has elapsed,
in the manner prescribed by law,
add 40 to 60 cubes of white sugar,
the date later to be fixed by the Court in warrant of execution.
six teaspoons of ketchup,
You are remanded to the custody of the warden of San Quentin,
then heat again for 30 minutes,
to be held by him pending final
secure the bag as done before,
determination of your appeal.
then stash the bag undisturbed again for 72 hours.
It is so ordered.
Reheat daily for 15 minutes.
In witness whereof,
After 72 hours,
I have hereon set my hand as Judge of this Superior Court,
with a spoon, skim off the mash,
and I have caused the seal of this Court to be affixed thereto.
pour the remaining portion into two 18 oz. cups.
May God have mercy on your soul.

How to make your own prison wine

by Conal Darcy | 1.6.10 | [27 Comments](#)

5

Tweet



This was a New Year's Eve for partyers, starting on a Thursday night and leading into a multi-night, celebratory weekend that put lame, midweek Dec. 31s to shame. And just maybe you woke up Monday and stared into those bloodshot eyes in the mirror, vowing to do it differently in 2010. Go out less, workout more, maybe even take up a hobby. Here's one worth a try: making some good old, 25-to-life, brewed-in-a-bag prison wine.

Brewing at home usually requires a pricey set-up and lots of time—usually just enough to scare off the casual brewer. Prison wine, or “pruno” does not. The stuff’s been made since the dawn of law enforcement and comes from the even older tradition of home brewing. Pruno can be made from almost anything, but it relies on the simple brewing principle that sugar + yeast + time = alcohol.

Traditionally, oranges and grapes are the preferred sugar in the equation, and moldy bread is the yeast (given that yeast packets probably aren’t sold at the prison commissary). But we’d rather not poison anyone with home-made botulism, so we’ll use the store-bought stuff, since we can go out and all. Also, since the genuine issue pruno generally is brewed on the DL, conditions are far from sanitary. We’ve added a few steps to replace just dumping everything into a trash bag and letting it molder under the bed. So, follow our advice, use the recipe below, and you’ll be imibing like a con in under a week.

Ingredients

10-12 oranges (or in a pinch, other sweet items you have around, like grape jelly or cake frosting)
1 large can of fruit cocktail (for a nice finishing flavor)
1 packet of dried yeast
3 cups of sugar
1 one-gallon plastic bag with strong seal

Steps

Peel all of the oranges and put them in the plastic bag. Add the can of fruit cocktail and squeeze out all of the excess air while securely closing the bag. Now mash up the fruit inside by squeezing the bag. This is the most labor-intensive part, and if you’re not careful, you’ll pop open the bag and have a sticky mess. Try to squeeze the fruit toward the bottom of the bag to avoid spills.

Once all the fruit is completely mashed up, add the sugar and mix well.

Now if you were really in prison, you’d forgo the next part. Since we want a safe and drinkable brew at the end, we’re going to have to sterilize the fruit mash. Put the bag of mash in a small pot and fill it with cold water so that most of the bag is covered. Next, place that pot in a larger pot of water and place it on the stove. The extra pot is needed to keep the bag from melting to the bottom. For all of you bakers out there, we’re essentially double-boiling.



Bring the pot to a boil over high heat. Then reduce the heat to medium and boil for 20 to 30 minutes: long enough to kill the bacteria that would ruin the batch later on. After the bag has been sterilized, you'll need to cool it down. You can dunk it in an ice bath or chuck it in the freezer for a half-hour. Make sure to cool the mash down to room temperature before moving to the next step.

The Magic Begins

Now to start a beautiful chemical reaction that will turn our sugary pulp into a high-octane alcoholic beverage. We are going to add yeast, a microbe whose sole purpose is to eat sugar and create ethanol. Most yeast needs to be "proofed," that is, the yeast needs to be awakened. To do this, fill a small bowl or cup with warm water and add a few teaspoons of sugar. Add the contents of the yeast packet and wait. After a few minutes the mixture will start bubbling—this is the sign of a healthy batch of yeast. Once the mixture is frothy, it's ready to be added to the mash.

Carefully pour the yeasty water into the bag of prison wine, seal the bag and mix it up. You did remember to cool it down, right? Otherwise, the temperature will kill our little alcohol-producing friends.

The Waiting Game

Within an hour, the bag should start expanding. That's the yeast feasting on the sugars inside, creating alcohol and carbon dioxide as a by-product. You'll need to tend to your bag in the first twelve hours by opening a small portion of the seal and releasing the carbon dioxide as it builds up. If you don't pay attention, the bag will pop and you'll have one terrible mess. Store the bag in a cool, dry, dark place.



To keep the bag from tipping over, place it in a large bowl. After a couple of days you'll notice your batch is inflating less and less, which means the carbon dioxide production is decreasing. The yeast is running out of sugar and slowing down. Periodically mix up the bag to spread the yeast throughout. After about five days you'll notice that essentially all reaction stops, with little or no carbon dioxide being produced. What we have left is a gallon bag of fruit mash and if you're lucky, tons of alcohol.

The Final Steps

The last thing we have to do is separate our fruit from our booze. Pour the bag through a colander and collect the liquid in a bowl. Get a large spoon and squeeze the mash to release as much liquid as possible. Throw out the mash when done.

What's left in the bowl is your prison wine. It's ready to drink (in theory) but it'll smell and taste pretty strange. To make it more palatable, pour the pruno into a pitcher and let it sit in the fridge overnight. After the remaining yeast in the mixture sinks to the bottom, pour off the liquid into another container and throw out the yeast (or drink it—it is very nutritious). The final result will be something akin to a very poorly mixed screwdriver. Toss in some ice and enjoy while you reflect on all the poor life choices that got you to this point.



Five ways to make your cheap wine taste good



Is that a "Red Wine of Any Season" or a Strawberry Mimosa? Try it and see.

There are people out there who love wine. They are connoisseurs. They own books about wine pairings. They swear by the expensive bottles, and they are planning trips to Napa Valley as you read this. Oenophiles, or "people who love wine," would be disturbed by the idea of drinking cheap wine (let alone adding mixers to it), but here at Brokelyn we are not so precious. And so we present five festive summery concoctions that will make your Two Buck Chuck taste like it cost at least four bucks.

Kalimoxto

1 part wine + 1 part Coke

I prefer slightly more wine than coke, but add either to your taste. Best with a Merlot or Cabernet

Sauvignon.

Tinto de Verano (Red Wine of Summer)

3 parts red wine + 1 part club soda + 1 part Sprite or 7-up
1 slice of lemon or lime for garnish
Also works well with a white wine.

Red Wine of Any Season

2 parts wine
1 part ginger ale
1-2 slices of orange (with peel)
1 dash of Angostura bitters
Place the orange slices in the glass, sprinkle in bitters and gently muddle together. Add ice and wine. Stir.
Top with ginger ale.

This is great with a Cabernet Sauvignon. I've also been known to throw in some mint with this if I have it in my fridge.

Fresh Strawberry Mimosas

2 parts strawberry-flavored André (or other inexpensive champagne)
1 part orange juice
slices of orange
sliced strawberries
Skewer the strawberries and orange slice together before adding to the glass.

Melon Spritzer

2 parts white wine
1 part club soda (or tonic, if you'd like it sweeter)
Melon balls (honeydew, watermelon, and/or cantalope)

If you don't have a melon baller, you can cut the fruit into 1" squares.

A boot-leggers' Kombucha guide

by Trevor Dye | 8.2.10 | [1 Comment](#)

3



If you're a member of "[Dude, Where's my Kombucha](#)" then you already know. Kombucha, the ancient Chinese remedy known by the Qing Dynasty as "the tea of immortality and the elixir of life," has been yanked from store shelves around the country. As we speak,

Kombucha is being poked and prodded by the government to see if the fermented drink's alcohol content is just a bit higher than advertised. If so, new labeling and taxation (and a valid ID at purchase?) might soon be in order, and it looks like it could be some time before the stuff's back on the shelves. So, does this mean panic-time for you jittery devotees desperate for a fix? Maybe, or you could just brew up the booch (hooch?) yourselves.

While pasteurized Kombucha products are still available in stores, the raw (unpasteurized) stuff's the problem. The more popular raw product starts with minimal alcohol, but, over time, the drink's yeast continues to convert sugars to alcohol, nudging the content over the 0.5 percent allowed in non-alcoholic beverages.



Pasteurized Kombucha often looks like this

One brand was even found to hit 2.4 percent (not far off from a very, very weak can of beer), according to a study cited in Good Magazine's initial report on the Kombucha shortage.

Luckily, even less-than-sterile home kitchens (that means you, former Bushwick roommate) can serve as a brewing lab for DIY Kombucha. Unlike home-brewed beer—where the tiniest microbe of bacteria can send you on a defeated march to the store for PBR—DIY Kombucha's some pretty hearty stuff. If you can brew tea, you can probably brew this too. Here's how:

What you'll need:

- 4-6 tea bags—orange, black, green or white tea in whatever combination (though one bag of black tea is recommended with green and white).
- Between 1 and 3 cups of white, cane or turbinado sugar depending on taste preference.
- 4 liters of distilled water (don't use tap or spring water).
- The “mother” or SCOBY (Symbiotic Culture of Bacteria and Yeast). This is what makes it all happen; it should be stored in already made Kombucha tea to keep it moist. If the SCOBY didn't come stored in already made Kombucha and you don't have any on hand, use 2 Tbsp apple cider vinegar.
- 5-liter glass jar
- Clean piece of cloth to cover the jar during fermentation (old t-shirt fabric works. Don't use a cheese cloth).
- Rubber band to fit over the top of the jar

- Stainless-steel pot
- Wooden spoon
- Funnel for bottling
- Recycled glass bottles with caps

Where do I get my SCOBY (mother) in Brooklyn?



A Kombucha Brooklyn starter kit

Email Martha@brooklynfeed.com who generously offered a free SCOBY to anyone near downtown Brooklyn in her recent blog post [How to Make Kombucha](#).

You can also take a crack at [starting your own SCOBY](#) (this is a helpful [video](#)).

Ask a Kombucha-brewing friend or community member: Each batch of Kombucha results in the forming of an additional SCOBY, so frequent Kombucha makers probably have excess on their hands.

You can buy a [Kombucha Brooklyn](#) starter kit locally for \$25 at one of vendors listed [here](#).

How to brew

1) Bring roughly half of the water to a boil (storing the remaining water in the refrigerator to keep cold). Dissolve the sugar in the boiling water. Turn the heat off and add the tea bags to steep for 20 minutes. After 20 minutes, remove the tea bags.



Heed this advice. Photo courtesy of Instructables.com

2) Pour the cold water into the glass jar, then add the tea. Add the SCOBY, rough side down, once the water is no more than lukewarm to the touch (also pour in about 6oz. of the Kombucha tea, the stuff the SCOBY is soaking in to keep moist during storage or the apple cider vinegar as mentioned above).

3) Place the cotton cloth over the jar and secure with rubber band. Store in a safe place at room temperature (cabinets work well – though it may stink up your pantry). Brew for at least 7-10 days, but you can go longer according to preference of strength and sweetness. The less time brewed, the sweeter it gets; Leaving it for beyond the two week mark leads to a dry and strongly acidic taste.

4) Remove the SCOBYs (You should have the mother and the newly formed baby). If you're storing the SCOBY for future use, keep it in a similar large glass jar, and pour in enough of your freshly made Kombucha to cover it.

5) Using the funnel, fill the glass bottles with your freshly brewed Kombucha tea. Place a plastic liner (recycled produce bags work well) across the top of the glass bottle, then cap to keep the metal bottle top from coming in contact with the still active Kombucha. Let rest for at least two days to get the bubbly effect. Hopefully, after pouring, your brew is bubbly with a small head of foam on top.

6) Optional: Add fruit (fresh or dried) or other ingredients, such as ginger, for extra flavor. If you like a sweeter Kombucha, you can add additional sugar to-taste during the bottling phase. Both the fruit and the sugar will feed the active cultures and add to the fizzy effect of the beverage during the resting period. If you have weak Kombucha after the brewing period, let rest longer during the bottling period.

Some Kombucha fine print

Kombucha has been widely praised for its health benefits, though scientific evidence surrounding the drink is still lacking. The CDC lays out some advice and warnings about consumption here.

For more advanced brewing methods, you can settle in for the 14-part Expert Village video series on Kombucha.

Recipes for moonshine.

Like poteen, good moonshine (white lightning) recipes are trade secrets, but this is a standard one. As

you can see, the proportions are for the serious distiller, so unless you're about to go in the business, you'll need to reduce them. Also note that good southern moonshine is always made with corn mash.

1 bushel wheat, rye, corn, or barley, washed clean.

25-100lbs. cane sugar (you may substitute brown).

45 gallons warm (80-85 deg F) water

1 lb. bakers yeast.

1 50-55 gal. barrel or Plastic trash can.

Place washed grain in clean barrel along with desired amount of sugar. Stir until

sugar is dissolved. Let stand until mixture is cool, below body temp. Place yeast in mixture. Cover with lid. Allow 13-15 days fermentation time. When all fermentation has ceased, siphon off liquid. Run through fine mesh screen to remove all green particles. Grain wine or mash is then ready to run through still. Will produce five to seven gallons of Moonshine when distilled.

Plans for stills are also closely guarded secrets, and many will say they are key to making good moonshine, especially the coil.

This recipe is for basic fruit wine. Left to mellow for a long time, becomes "brandy." Southerners love their peach brandy, and I'll tell you, a wee bit of it will level you! They also refer to moonshine as peach brandy just to throw off the authorities. moonshine jokes.

2-3 lb. (1-1.5Kg) fruit (well mashed)

2-3 lb. (1-1.5Kg) sugar

3 gallons (11 litres) water

1 yeast cake

Yeast energizer, captian and yeast nutrient.

Put everything in a vat (5 gallon pail) until the fermentation stops (about 7 to 10 days).

Rack it off into once used wine bottles (gallons).

Let it sit for three weeks.

Rack it off again and let it sit for 3 months.

Then rack it off again and let it age for as long as you can wait. The more you rack it off, the clearer it gets. The best "brandy" is clear as glass.

Using real yeast is the way to go. I tried some wheat bread for a full day with no activity or bubbles (CO₂). So I went to the baking aisle of the grocery store and pick up some "Fleischmasn's ActiveDry" Yeast used in cakes.

I put this yeast in my old mix the second day. Wow... You have got to watch that CO₂ build up. I used an empty gallon apple juice jug, the thick plastic type with a screw cap.

The pressure didn't build until I had walked away from it but when I came back to it in a few hours to vent it, (I had it closed tight) the jug went from "jug shaped" to "soccer ball about to explode." I got to it in time fortunately and now I keep it cracked a bit.

My warped bottle is now more than its original gallon. I will now go into detail as to how I did this with a gallon because in the video he used a 3L jug.

I first had to know how many cups equal 500g of sugar. 500g equals about one pound says my cook book conversion table. Then using the serving size on the package and more math I am not going to go into here

I calculated I needed about 3 cups of sugar for my one gallon jug in order to get the same proportions as the video.

I boiled some water and let it cool for a few so as not to melt the bottle or the funnel and mixed some to dissolve the 3 cups of sugar.

Then filled half way with warm water and added around two table spoons of the yeast I mentioned above.

Then I fill the rest with orange juice leaving no less than one inch of air on top to give the foam created by the CO₂ bubbles time to pop.

Otherwise you will have a foamy mess coming for the next few days. I used a heat vent for the first day then I remembered the spa in the back yard is set to 100 deg.

(Incert Evil Grin) Perfect. I know (via cook book) that yeast does best between 80 and 120. On the second day of real yeast I put the jug in the water of the spa for a day. It sits on top of the filters of the spa to prevent it from becoming submerged or float around in the spa. In conclusion, I tested the p

In conclusion, I tested the product and found it to be a little stronger than wine. Wine in my experience has been 12-15%(24-30 Proof). This stuff was about 18-20%.

I would imagine it would double with the four to five days that is suggested in the video.

how much bread yeast did you use in doing a 2L bottle ?

Update: Day three. The bubbles continue to churn. This stuff is getting strong. After having about 18oz worth of this stuff, the volume of a beer and a half, I was as drunk as if I had slammed a six pack. I figure it will be liquor by the time day five comes. I find it funny that the man in this video is wearing a shirt that looks prison issued.

Update: It's the end of day four. The bubbles have stopped and I have started on my second batch. The mix is somewhere between strong wine and vodka. It's maybe a respectable 33-37%. Not bad for the price and no still. I will never again look at orange juice the same or yeast for that matter.

here's a little tip instead of having the lid loose just stick a few holes in a balloon and put the over the top it will let the air out and no air in which i'm assured is exactly what ya need.

How to Make Prison Wine

Things You'll Need

- Fruit or fruit juice
- Fruit cocktail
- Sugar

Wine yeast or moldy bread (optional) Plastic bags Ketchup Water Show (4) More

Instructions

1.

○ 1

Make a strong bag by using two small trash bags, placed one inside the other. Place a fruit of your choice and fruit cocktail inside the bag. Seal bag.

○ 2

Mash the fruit and fruit cocktail inside the bag with your hand. Fill the sink with hot water and place the bag into water. Let sit for 15 minutes. Make sure water does not cool; add more hot water, if necessary.

○ 3

Take the bag from water, and wrap it in a towel to keep it warm. Leave for 48 hours while the fruit ferments. If it's warm outside, leave the bag in a safe place outdoors.

○ 4

Add sugar and ketchup. Use about 50 sugar cubes. If using yeast or moldy bread, add that as well. Reseal the bag, and run under hot water for 30 minutes or until the sugar is fully absorbed.

○ 5

Heat the bag in hot water for 15 minutes once a day for three days. Leave wrapped in a towel. Check often; the bag swells as gases are released. It may pop. When ready, separate the mashed fruit from the liquid, and there you have your wine.

If you want something that's tasty, but doesn't require distilling, make Lithuanian bread "beer". The name of the drink is "gira" (short "i", as in "bin").

Here's a recipe:

10 liters clean water

1 kg. sugar

handfull of raisins

1 sliced lemon (peel and all)

bread yeast

toasted rye bread

gauze

1. Dissolve the sugar into the water (easiest done by heating several liters and dissolving the sugar into the hot water).
2. take the toasted rye bread and wrap it into the gauze (this is done so that it doesn't mush into the drink and make filtering necessary) -- wrap the gauze into a nice little package with sewing thread (so it doesn't open or fall apart).
3. Put the bread package into the sugar water (at body temp or less).
4. throw in the raisins and sliced lemon.
5. put in the bread yeast
6. Let it ferment for 3-5 days (dependind on temp).
7. Drink

What you'll get is a nice, bubbly, slightly sweet drink with about 4-5% alcohol. VERY refreshing, and it gives you a nice buzz. It's not for serious drinking, as the remaining sugar will probably give you a bit of a hangover.

Tony's Steps to Making Homemade Alcohol

For full details, read the rest of <http://homedistiller.org/>

1. Make or buy a decent still. Only use a POT still if you intend on making whiskey/schnapps etc (ie flavoured by the mash). Use a REFLUX or FRACTIONATING still to make neutral (tasteless) alcohol to flavour up later.
2. To prepare 18-20 L of wash for use
 - o Whiskey : Heat 4 kg cracked or crushed malt with 18 L of water to 63-65°C, and hold there for 1-1.5 hours. Heat to 73-75°C, then strain off and keep liquid, using 250 mL of hot water to rinse the grains (should have an initial specific gravity of 1.050).
 - o Vodka : dissolve 5 kg of sugar & 60 g of nutrients in 20 L of water
 - o Rum : as per vodka, but use some brown sugar or mollasses, to give an initial specific gravity (SG) of around 1.06 - 1.07.
3. Cool the wash to below 30°C, then add hydrated yeast.
4. Ferment the wash at a constant 25°C until airlock stops bubbling.
5. Let settle for a day, then syphon carefully into the still.
6. Bring up to boiling temperature (start the cooling water through the condensers once you get to about 50-60°C), then once it has started distilling;
 - o Discard the first 50 mL's (this may contain some methanol),
 - o Collect the next 2-3L of distillate.
 - o Segregate the distillate into 500 mL containers as you collect it.
 - o Stop distilling once the temperature gets to 96°C (else the flavours get nasty).
 - o Set aside any distillate which smells of tails/fusels. This can be added to the wash of the next run, and cleaned up then.
7. Turn off the power, then the cooling water. Open the lid, so that it doesn't create a vacuum inside the still & crush it. Wash up the still, dry it well, and then store/hide the pieces.
8. If you've made a neutral spirit, dilute it down to 30-50 % purity, then soak it with carbon for a week or two to help clean up any flavours still present.
9. Dilute it down to drinking strength (20-40%), then age and flavour the spirit, using either commercial essences, oak chips, fruits.
10. Find a comfortable spot to sit, put on your music of choice, then sip & enjoy with the ones you love.
11. If you have any questions, ask them on the Homedistiller Forums. This is a very active group of people, and questions are answered rapidly.

Home Distillation of Alcohol

I'm still learning about the art of distilling - I've only been running for a couple of years now (since '97), first using a Still Spirits 20L Reflux still to knock up neutral spirits, then moving up to a "offset head" design to make it at 190 proof. I'm a Chemical Engineer by trade, with home brewing as a somewhat limited sideline hobby - a dangerous combination.

Distillation is simply the collection of the ethanol (alcohol) that was made during fermentation. It is the process of heating up the liquid so that it becomes a vapour, then condensing the vapour on a cold surface & collecting it. This works due to the fact that the vapour will contain more alcohol than the liquid it is boil off, because of the different physical properties of water and ethanol. We can then make the vapour more pure by letting it be "stripped" of its water content by passing it up through a packed column which has some condensed vapour running back down through it as liquid. When the two pass each other, the vapour will absorb alcohol from the falling liquid, and the liquid will take some of the water from the vapour. Distilling doesn't "make" the alcohol, nor turn some of it "bad", or into something that will blind you; its only collecting the alcohol that was made during fermentation.

The following pages will guide you on how to prepare the sugar feedstock, distill it, then dilute, age & flavor it. They also cover how to make a still and where to buy them.

There's two ways to go with home distillation;

Use a wash of just sugar, water, nutrients & yeast to distill a tasteless & odourless vodka, using a **REFLUX** still. This is then flavoured using either essences or fruits (see the links about Liqueurs). Many of the commercially available flavourings are near spot-on, and hard to tell from the real thing. Real easy.
Get a little fancier, and use grains (corn, rye, barley, wheat ..) to try and duplicate your favourite whiskey, bourbon ...etc, using either a **POT** or **REFLUX** still.

Ferment these up like you do home-made beer, then pass it through a still to collect the alcohol, and you're ready to party.

"NEW DISTILLERS" Frequently Asked Questions (Feb'03)

Posted near the 1st of each month, to the NEW_DISTILLERS newsgroup at www.yahogroups.com

Please email any additions, corrections, clarifications required, etc regarding the FAQ to Tony Ackland (Tony.Ackland@comalco.riotinto.com.au), however please direct any general questions to the newsgroup itself.

- 1) Is distilling hard to do ?
- 2) Is it legal ?
- 3) Will it make me blind ?
- 4) Whats the difference between a pot still, reflux still, and fractionating column ?
- 5) How do I get or make a still ?
- 6) How do I make a whisky / rum / vodka / gin ?
- 7) Should I use sugar or grains ?
- 8) Can I use fruit wine ?

- 9) How do I make a Turbo-all-sugar wash ?
- 10) How do I run a Pot still ?
- 11) How do I run a Reflux still ?
- 12) Can I use a reflux still to make rum or whisky ?
- 13) How do I measure the strength of it & dilute it ?
- 14) How do I get rid of that "off-taste" ?
- 15) Why do my spirits turn cloudy when diluted ?
- 16) How do I flavour/turn the vodka's into something else ?
- 17) What web resources are there ?
- 18) How do I contact the NEW DISTILLERS news group ?
- 19) Can I run my car on it ?
- 20) How do I convert between gallons and litres and
- 21) What is a "Thumper" ?
- 22) Can methylated spirits be made safe to drink ?

1) Is distilling hard to do ?

Nope - if you can follow instructions enough to bake scones, then you can successfully distil. To distil well however, will require you to understand what you're doing, so read around and get a bit of information under your belt before you begin.

2) Is it legal ?

Probably not. It is only legal in New Zealand, and some European countries turn a blind eye to it, but elsewhere it is illegal, with punishment ranging from fines to imprisonment or floggings. This action against it is usually the result of either religious beliefs (right or wrong), but more generally due to the great revenue base it provides Governments through excise taxes. So if you are going to distil, just be aware of the potential legal ramifications.

3) Will it make me blind ?

Not if you're careful. This pervasive question is due to moonshine lore, which abounds with myths of blindness, but few actual documented cases. The concern is due to the presence of methanol (wood alcohol), an optic nerve poison, which can be present in small amounts when fermenting grains or fruits high in pectin. This methanol comes off first from the still, so it is easily segregated and discarded, and easily observed via changes in the vapour temperature. A simple rule of thumb for this is to throw away the first 50 mL you collect (per 20 L mash used). Probably the greatest risk to your health during distilling is the risk of fire - collecting a flammable liquid near a heat source. So keep a fire extinguisher nearby.

The cases where you do hear about people poisoned by "illicit spirits" have been the terrible situations where adulterants such as methanol, antifreeze, battery acid etc have been added to the spirits afterwards by unscrupulous sellers (for what misguided reasons ??). If you have had a healthy fermentation take place, it is in fact very difficult to make methanol. The other problems have been lead poisoning when people have used lead-based products (ie lead solder) when constructing their still, instead of something more appropriate for food-grade vessels. The rules should in fact be "don't buy spirits from an unknown supplier" - but it's very safe to distill for yourself.

4) Whats the difference between a pot still, reflux still, and fractionating column ?

A pot still simply collects and condenses the alcohol vapours that come off the boiling mash. This will result in an alcohol at about 40-60% purity, with plenty of flavour in it. If this distillate were put through

the pot still again, it would increase in purity to around 70-85% purity, and lose a bit of its flavour.

A reflux still does these multiple distillations in one single go, by having some packing in a column between the condenser & the pot, and allowing some of the vapour to condense and trickle back down through the packing. This "reflux" of liquid helps clean the rising vapour and increase the % purity. The taller the packed column, and the more reflux liquid, the purer the product will be. The advantage of doing this is that it will result in a clean vodka, with little flavour to it - ideal for mixing with flavours etc.

A fractionating column is a pure form of the reflux still. It will condense all the vapour at the top of the packing, and return about 9/10 back down the column. The column will be quite tall - say 600-1200mm (2-4 foot), and packed with a material high in surface area, but which takes up little space (pot scrubbers are good for this). It will result in an alcohol 95%+ pure (the theoretical limit without using a vacuum is 96.48 % (by volume)), with no other tastes or impurities in it.

5) How do I get or make a still ?

If you're after a pot still, these are generally home made using what-ever you have at hand - say copper tubing and old water heaters or pressure cookers. You don't really need any plans for these - just follow any of the photos about.

Reflux stills can be made from plans on the net, or bought from several manufacturers. For reflux still plans see

There are 100's of designs in the [reflux section](#), of the forums:

The photos section for [Offset head](#), designs and this section for [general reflux stills](#).

Alex's designs at <http://groups.yahoo.com/group/Distillers/files/OFTS/>

Ian Smileys "Making Pure Corn Whisky" at <http://www.home-distilling.com>, with full design details.

For an excellent book on all aspects of still design, see "The Compleat Distiller" at <http://www.amphora-society.com>

See the list of "web resources" below for links to sites selling ready-made stills.

For fuel alcohol stills see the Mother Earth Alcohol Fuel manual at

http://journeytoforever.org/biofuel_library/ethanol_motherearth/meToC.html, and the The Manual for the Home and Farm Production of Alcohol Fuel by S.W. Mathewson at

http://journeytoforever.org/biofuel_library/ethanol_manual/manual_ToC.html Regarding the

choice of heating for the still - if you have 240V available it is usually easiest to control & safer (particularly with internal elements). Gas can be used, but more care is needed to keep the collection container further away and not letting it overflow.

For more details on design, see [Designs](#) and [Reflux Design](#)

6) How do I make a whisky / vodka / rum / gin ?

Whiskey : Heat 4 kg cracked or crushed malt with 18 L of water to 63-65 °C, and hold there for 1-1.5 hours. Heat to 73-75 °C, then strain off and keep liquid, using 250 mL of hot water to rinse the grains. Cool to below 30 °C (should have an initial specific gravity of 1.050). Add hydrated yeast & leave to ferment (maintain at 26 °C) until airlock stops bubbling and final SG of around 1.010. Let settle for a day, then syphon carefully into a pot still. Discard the first 50 mL's, collect the next 2-3L of distillate or until you start noticing the tails coming through. Many people also have success starting with a beer-kit instead of using grains.

Vodka : dissolve 5 kg of sugar & 60 g of nutrients in 20 L of water, cool to below 30C and add hydrated yeast. Leave to ferment at 25 °C until below an SG of around 0.990, then settle for a day. Syphon into a reflux or fractionating still, and collect as per usual.

Rum : as per vodka, but use some brown sugar or mollasses, to give an initial specific gravity (SG) of around 1.060 - 1.070. Run through either a pot still, or a de-refluxed reflux still.

Gin : make a very pure vodka, then add the following essence. Simmer 35 g of juniper berries in 350 mL of 50% vodka for ten minutes with the lid on, let cool overnight, then filter through coffee filters. Use 5-10 mL of this essence per bottle of vodka.

When doing any fermenting, take a lot of care to ensure that any items used are clean/sterile (soaking them in a water + bleach (10 mL per litre)), or else the wash can start growing other things. Use a closed fermenter with an airlock too, to let the CO₂ out without letting wild yeasts, bugs etc in. For more information about fermenting, see beer or wine homebrewing sites.

7) Should I use sugar or grains/fruit ?

It depends on what sort of still you have, and what you are trying to make. If you have a reflux or fractionating still, only use whatever is cheapest (usually sugar), as the refluxing will strip out all the flavours anyhow. If you have a pot still, and are after a bourban or whiskey, then you need to go the grain route, or mollasses if after a rum. If you are trying to make a neutral spirit for flavouring, go for sugar.

Basic guidelines for using them are ..

SUGAR. Wine yeast can use no more than 2.5lbs of sugar/1imp gal or 2.2lb/1U.S.gal or 1.25kg/5litres of must. This will produce 14%a.b.v. Honey and liquid malt extract are 80% sugar so you need 1.5kg/5l must or mash. Molasses is 50% sugar so you need 2.5kg/5l must or mash. Maple syrup is 32% sugar. Carob beans are 45% sugar. Sugar beets are 15% sugar Grain malt is 60% sugar (starch converted to sugars) so you need 1.5kg/5l mash. Cooked grain contains 60% convertible starch so you need 1.5kg/5l mash

FRUIT - Grapes contain the ideal sugar, water, acid balance. A sugar content of 17-23% and a water content of about 80%. 8kg of grapes produces 5l of wine.

Most common fruits (apples, plums, apricots) contain about 10% sugar and 85% water. Cherries and figs contain 15% sugar. A fruit mash could be 4kg fruit, (400g sugar content), 2l water (3l in pulp already), 800g additional sugar.

Bananas are 17-24% sugar, 75% water. Acid content 0.3%. A banana mash could be 4kg of cooked bananas, 2l water (3l in pulp already),400g sugar. Add 3lemons/5l for correct pH.

Dates are 70% sugar, 20% water. Add acid to a date mash.

Raisins and sultanas have a water content of about 15% and a sugar content of 60%, grapes have a water content of 75% and a sugar content of about 20%, so using 1.5-2kg/5l of water appears about right if we want to reconstitute them.

ACID - 5g of citric acid (1tsp)/5l must raises acidity by 0.1%. 3g of calcium carbonate powder lowers acidity by 0.1%. A pH of 5 is 0.4% acidity. Winemakers aim for 0.6% acidity. Most common fruits are about 0.6% acid content. For distilling, a higher acidity in the mash helps to suppress bacteria. A high tannin content doesn't matter as we are not making wine. Measurements are logarithmic, so a pH of 4 is 10 times more acidic than a pH of 5.

YEAST - Brewers (& possibly baker's yeast) can tolerate only 8% alcohol. A bottom fermenting lager yeast ferments out all the sugars better than a top fermenting ale yeast. A good wine yeast

(Champagne, in the right conditions, can tolerate 15%a.b.v. (up to 18%a.b.v. in optimal conditions - no need to use expensive turbos). Wild yeasts vary, but some are very low - this is a risky path. Whisky distillers often use a combination of yeasts - initially a brewer's yeast because they believe it effects the flavor.

8) Can I use fruit wine ?

Sure, if you have it available. Again, using a pot still will result in a brandy/grappa/schnapps, whereas a reflux still will just strip it down to neutral spirit.

9) How do I make a Turbo-all-sugar wash ?

The first trick is to locate the "Turbo" yeasts - either try the New Zealand sites, or www.brewhaus.com. Then, dissolve 5-6 kg of sugar with 2-3 L of boiling water, top up to 25 L with cold water, wait until its cooled below 24 °C, and then stir the yeast in, and close the lid with an airlock. Keep at 24 °C until the SG has dropped below 1.010 Its then possible to add extra sugar (1 kg at a time, dissolved in a little water) each time the SG has dropped below 1.010. You should be able to add an extra 3-4 kg this way over a week. It should finish around 0.980 - 0.990

10) How do I run a Pot Still ?

See [How to use a Pot Still](#) for details. A pot still is fairly straight forward to use. Turn it on. Once the temperature is up to about 60 °C turn on the cooling water to the condensor. Make sure you throw away the first 1 00 mL per 20L wash, as this will contain any methanol that might be present. Segregate the distillate into 500 mL lots as it comes off. Only keep (for drinking) that which doesn't contain fusels (smell off) - probably below about 92 ° C, however you should keep distilling past here, untill about 96 ° C, as this fraction, although high in tails and not good for drinking this time, can be added back to the next wash and cleaned up OK then.

11) How do I run a Reflux / Fractionating Still ?

See [How to Use a Reflux Still](#) for details +/- variations. Also, see this post from the HD forum: [LM Still running instructions](#) and a very good how to thread on running an older CM type still is found at: [Running a brewshop CM still](#)

It is best to first equilibrate the column under total reflux for 10 minutes or so. This will concentrate up the foreshots so that they can be removed first. Collect them one drip at a time, for approx 50 mL per 25L wash, and throw away. You can then collect the remaining run at a quicker rate. Adjust the reflux ratio (the ratio of how much of the total vapour is returned as reflux) by varying either the rate of collection or rate of cooling water (depending on still design) to maintain the purity you want. You can judge the purity by measuring the vapour temperature. Target around 78.2 - 78.4 °C . Towards the end of the run it will be hard to get a high enough reflux ratio to maintain the high purity / low temperature. When the temperature has nudged up to around 80 °C quit collecting for drinking, and collect the remainder as tails (for redistillation in the next run) up to around 96 °C .

12) Can I use a Reflux Still to make Rum or Whisky ?

Yes you can. To do so, you need to carefully monitor the various transitions between the foreshots, heads, middle run, and tails, and time the collection of the middle run precisely. The reflux still allows you to more precisely judge the changes between the various stages, and hence target them accurately. A typical rum or whisky would be obtained by discarding the foreshots, then collecting the heads, middle run, and then begin the tails, until the purity has dropped to around 58-60% (82 °C). By altering when to start collecting, and how late to time the final "cut", various flavour profiles will result. You'd collect it faster and at a slightly lower reflux ratio than for a neutral spirit, as you want the flavour present.

13) How do I measure the strength of it & dilute it ?

You need a hydrometer. This is a wee float, with a scale inside it. The more alcohol that is present, the lighter the density of the liquid, so the hydrometer sinks a bit lower. You then just read off the scale how much alcohol is present. You need a separate hydrometer for measuring the density of the mash, as this is generally > 1.0, whereas the spirit is < 1.0, and they can't accurately do both ends of the scale.

14) How do I get rid of that "off-taste" ?

That "rough moonshine edge" or "off-taste / wet cardboard smell" is due to impurities such as the higher order alcohols, known as cogeners or fusel oils. These will be present more when using a pot still, less if using a reflux still, and just about absent if using a fractionating column. So one way is to use a taller packed column and increase the amount of reflux occurring. They can also indicate that you've tried to collect too much of the alcohol, and have run into the "tails"; so finish collecting a little bit earlier next time. Soaking tainted alcohol with activated carbon for a week (or even months) will help remove some of this flavour - this is known as "polishing" the spirit. I'm also suspecting that you need a little bit of copper somewhere in the still where it can come in contact with the vapour. The copper helps catalyse some of the sulphur, esters & organic acids, reducing their odour & taste.

15) Why do my spirits turn cloudy when diluted ?

With neutral spirits, either you have pushed 'tails' into your product (eg collected too much product from the still - quit earlier next time), or you are using poor tap-water (high in calcium carbonate). If it happens when diluting your gin, sambuca or the like, its because there is too little alcohol/too much oil present and the oils are no longer dissolved. Either drink it cloudy or increase the % alcohol present.

16) How do I flavour/turn the vodka's into something else ?

There are now many commercial flavourings available, which turn vodka or neutral alcohol into pretty decent gin or whiskey, or all manor of liqueurs. See the commercial sites, Ray Toms <http://moonshine.co.nz/> for details. Or you can soak it with oak chips and make whiskey, or soak fruits in it to make your own liqueurs. There are many websites describing how to make liqueurs - see [Liqueurs](#) or <http://www.guntheranderson.com> for a starting point.

17) What web resources are there ?

For more details, see :

[THIS website :](#)

[user FORUMS](#). The information filled user interactive Forums for THIS website.

[Biofuels Library](#)

18) How do I contact the NEW DISTILLERS news group ?

Both the NEW DISTILLERS and the DISTILLERS news groups are available via YahooGroups, at <http://www.yahogroups.com> . NEW DISTILLERS is, as the name suggests, intended for those of you new to distilling and after simple, straight-forward answers to questions, whereas the DISTILLERS group discussions are a bit more advanced, throwing in bits of design philosophy, theory, and alternative ways of achieving the results. Both tend to overlap to some extent.

19) Can I run my car on it ?

You can run your car on alcohol over about 80% purity. Because any water present will separate out in the presence of the gasoline (and become a problem), you either need to exclusively use the alcohol, or dry it right out (eg 99%+ purity) if using it to mix with gasoline. See Steve Spences site for more details, the Mother Earth Alcohol Fuel manual, or the The Manual for the Home and Farm Production of Alcohol Fuel. In addition, in the USA, you can get a "small fuel producer" permit, which allows small scale distilling for "motor fuel" purposes. A nice advantage is that they don't require denaturing for "fuel" used on the premises.

20) How do I convert between gallons and litres and

To convert between SI & Imperial units, multiply the first unit by the conversion factor to get the second. Divide back to do it in reverse .eg 1L = 0.264 US gal, so 20 L = 20 x 0.264 = 5.28 US gal, and 20 US gal / 0.264 = 75.76 L

1 L = 0.264 US gal = 0.221 UK gal

1 L = 1.057 US qt = 0.880 UK qt

1 kg = 2.204 lbm = 32.15 oz (troy) = 35.27 oz (av)

deg F = ((9/5) x deg C) + 32

1m = 1000 mm = 39.37 inch = 3.28 ft = 1.09 yd

21) What is a "Thumper" ?

A "thumper" is an extra chamber sometimes fitted to a pot still. It can be as simple as a glass jar with two holes in the lid. The off-take from the still is fed into it, with the pipe running almost all the way to the bottom of the jar; the jar is half filled with liquid (water or mash or tails) so that the vapour from the still will bubble up through it; then the vapour coming off it is collected & cooled as per normal. It acts as a second distilling chamber using just the heat from the vapour, and lifts the purity from 50-60% to 70-80%, hence improving what might otherwise be a very mediocre design. Don't make the thumper too small, and start it off with liquid already high in alcohol.

22) Can Methylated Spirits be made safe to Drink ?

No. Methylated spirits (aka meths) is a mixture of ethanol and (poisonous) methanol, with a denturant added to make it foul tasting. There is no effective way of seperating them, be it by distilling, using carbon, or filtering through bread (old wives tale). Do not add meths to anything you ever intend to distill or drink, and don't try using it in any form - it will still be poisonous. Keep it for cleaning and starting the BBQ with. Likewise, you cant "clean up" antifreeze in your still.

Types of Stills

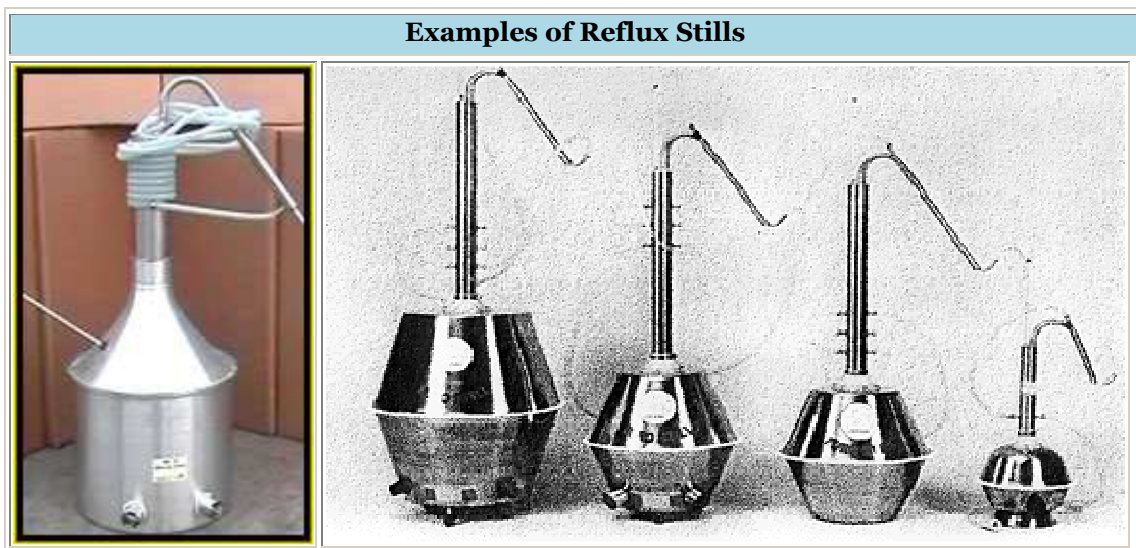
Whats the difference between a pot still, reflux still, and fractionating column ?

A **POT** still simply collects and condenses the alcohol vapours that come off the boiling mash. This will result in an alcohol at about 40-60% purity, with plenty of flavour in it. If this distillate were put through the pot still again, it would increase in purity to around 70-85% purity, and lose a bit of its flavour.

Examples of Pot Stills



A **REFLUX** still does these multiple distillations in one single go, by having some packing in a column between the condenser & the pot, and allowing some of the vapour to condense and trickle back down through the packing. This "reflux" of liquid helps clean the rising vapour and increase the % purity. The taller the packed column, and the more reflux liquid, the purer the product will be. The advantage of doing this is that it will result in a clean vodka, with little flavour to it - ideal for mixing with flavours etc.



A **FRACTIONATING** column is a pure form of the reflux still. It will condense all or most of the vapour at the top of the packing, and return about 9/10 back down the column. The column will be quite tall - say 600-1200mm (2-4 foot), and packed with a material high in surface area, but which takes up little space (pot scrubbers are good for this). It will result in an alcohol 95%+ pure (the theoretical limit without using a vacuum is 95.6%), with no other tastes or impurities in it. Note that both reflux and fractionating stills can still be used to make whisky, rum etc, as they allow a very precise "cut" between the heads, middle, and tail runs.





Pot Stills

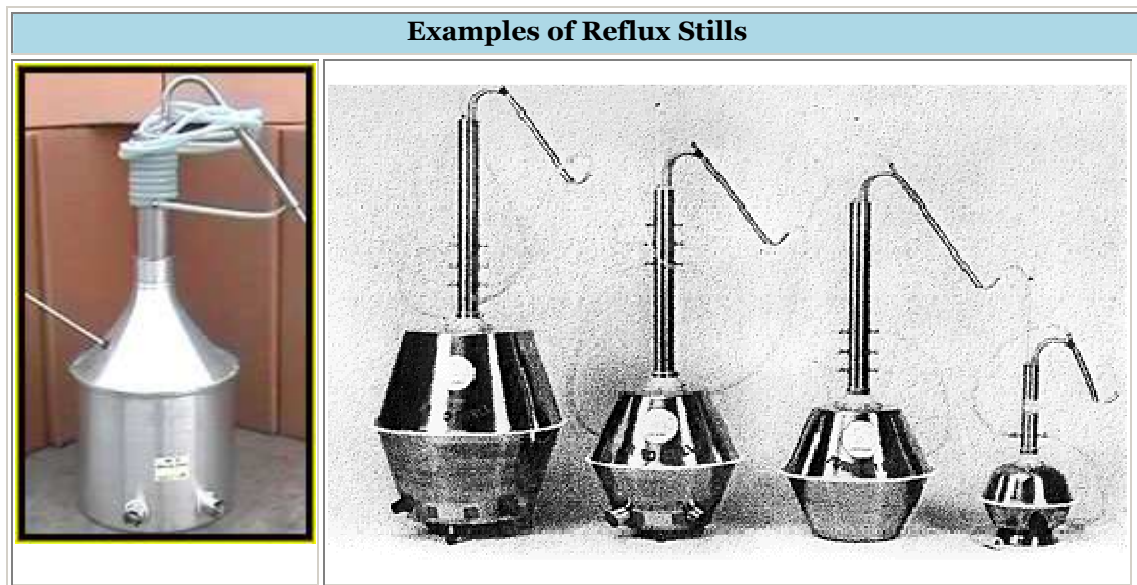
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Examples of Pot Stills



CM Reflux Stills

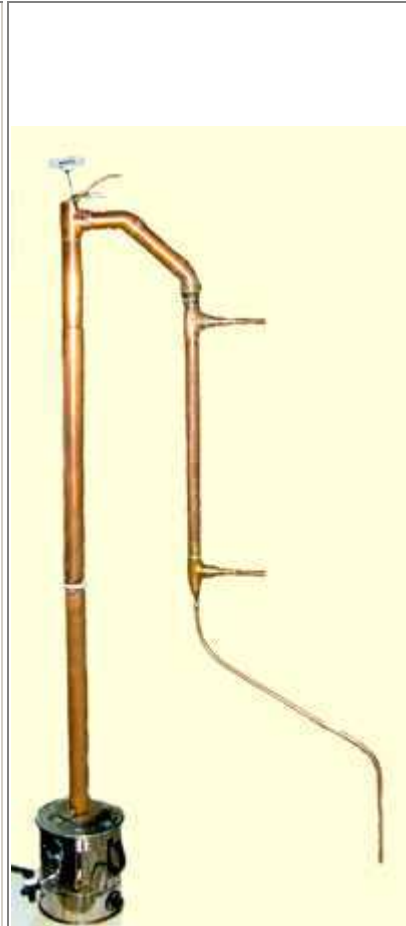
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Fractionating Stills

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Examples of Fractionating Columns



Flavoring

Summary

There are now many commercial flavorings available, which turn vodka into pretty decent gin or whiskey, or all manor of liqueurs.

If you're looking for essences, contact [Brewhaus](#)

Or you can soak it with oak chips and make whiskey, or soak fruits in it to make your own liqueurs.

See the following sections ...

using wood (oak) for whisky & bourbon,
flavored neutral spirits (non-sweet),

The liqueurs can be made using

fruit & berries,
herbs,
citrus, or

liqueurs (sweet), and
essential oils,

spices,
nuts & seeds,
emulsions using cream or eggs

Most of the fun comes from trying out different flavors, and making up your own liqueurs. Whiskeys etc usually require a bit of time spent with oak - something like 80% of the flavor is said to come from the wood.

It is quite tricky however to copy exactly the flavor of a favourite spirit. There are many factors which influence the flavor, and we can't easily copy them, nor quickly mature a whisky;

The two main sources of organoleptically (smell/taste) important compounds are

- the yeast used during fermentation, and
- the oak barrels used to mature the spirit in

other factors include

- the proportions of grains used
- mashing technique,
- fermentation environment, and
- type and operation of the distilling equipment.

Most manufacturers use a form of *S.cerevisia*, though some may also use some brewers yeast too. Sometimes, bacterial activity is actually encouraged in the wash to some extent. These include lactic acid bacteria, Gram positive & Gram negative bacteria. These will excrete compounds that add to the organoleptic qualities. These bacteria need to be really carefully controlled and managed, kept well below certain levels. (This would be a real fine balancing act, by experienced brewers - don't try it at home kids)

Most wash is fermented out to around 10-12% alcohol, though some may be 8% (quite different to the 23% we're targetting - thus get a different concentration of the flavors)

The use of copper in the still to fix some of the sulfur containing compounds (hmmm... go the guys with an all-stainless setup - though I've heard of copper strips being hung in the headspace)

Maturation involves three different actions ...

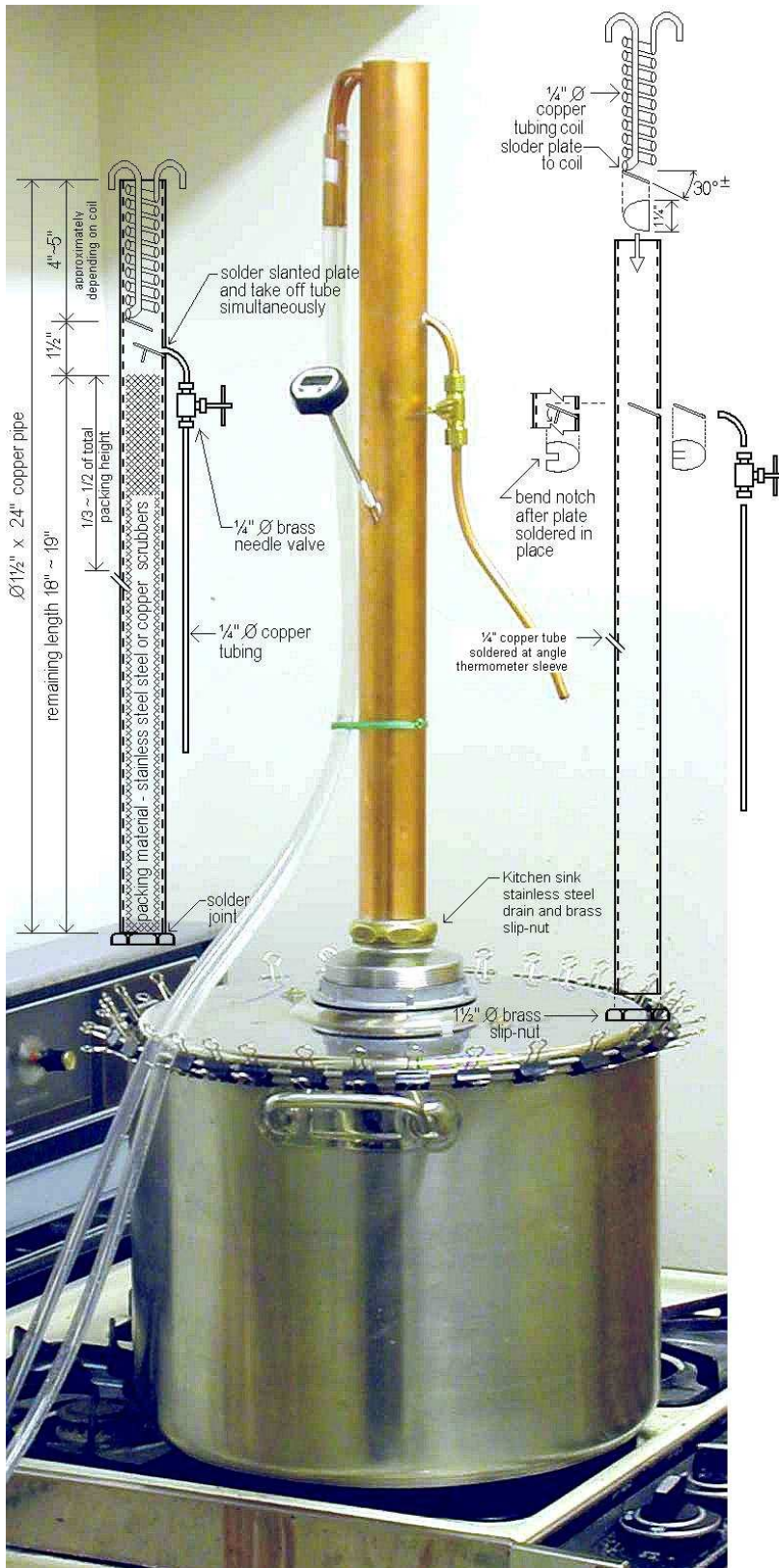
- extraction of compounds out of the oak, including lignin, tannins, oak lactones, sugars, glycerol, and fructose. This can be affected by the % of the alcohol, and even how the wood was dried. Around 25-30% of the colour is developed in the first 6 months.
- modification of the compounds, to form aldehydes (particularly acetaldehyde), acetic acid, and esters (ethyl acetate) - this takes time
- subtraction of volatile compounds by evaporation and absorption into the charred surfaces - this takes time, and needs to be quite selective

the flavors which add to the taste/smell can be present in very small concentrations - only one volatile compound (isoamyl alcohol) exceeds 0.01%, whereas most of the others present are less than 50 parts per million (ppm). Some important ones are there in parts-per-billion. Heaps of different ones are listed in the books. You're not going to find all these in the essences, nor in the exact right proportions.

Still Designs & Plans

Check out the **Photos of Stills** section to at least see what they should be constructed like.

There are some excellent designs by Alex (Bokakob) in [Bokakob designs](#).



Mini-Still

This is Mini-Still -- it is simple, easy to build out of most common materials. With proper operation this device will deliver 600mL/hr of 95% abv in reflux mode and 1.8L/hr in pot-still mode. This column has only eight separate parts and three soldered joints.

Supermarket Moonshine

1 plastic water 5 gallon bottle
 20 gm bakers yeast
 5 lb sugar
 4 oz tomato paste
 1 tbsp molasses, unsulfured
 1 lemon average

Heat 2-3 liters of water and gradually dissolve sugar there with constant stirring. Squeeze the lemon in the syrup and let the mix boil for 10-15 minutes, then cool it by adding cold tap water with a lot of splashing to aerate the mix.

Pour still warm mix in the plastic bottle and add tomato paste, molasses mixing it all well.

Pour cold tap water to 16-17 liter mark and make sure the mix is cooled enough for your elbow to feel comfortably. Sprinkle yeast on top. First two days mix/stir the wash whenever you pass next to the bottle.

Leave it alone for the next 7-10 days days.

The resulting brew is approximately 8%-9% alcohol by volume (abv) and is ready to be distilled as soon as the bubbling stops completely or subsides to a very low level. If left undisturbed, this mix will settle completely to a light yellowish clear beer.

Basic operation:

Heat sugar mash in the boiler. Turn on cooling water close to boiling point. Do not decrease heat unless the column chokes or vapor escapes from the top. Wait until steady boiling produces constant vapor flow. Establish steady equilibrium with constant temperature. Close the valve completely to establish temperature 77-78°C. Wait 20 or so minutes. Make sure there is a sound of distillate dropping back in the boiler! Decrease water coolant flow to the point when it becomes very hot and/or temperature starts rising. Start "bleeding" foreshots at a slow rate of 1-2 drops per second. Do with this whatever you prefer.

Total is about 5% of the alcohol in the mash. After most of the smell is gone, increase the take off rate a bit and collect some "heads." Save it for the next batch redistillation. Total is about 15% of the alcohol in the mash. When heads are finished increase the takeoff rate to a steady dripping which is close to a weak stream. Adjust the take off to maintain constant temperature 78°. If the temperature starts rising re-stabilize again if required, even close off the valve completely. Total is about 50% - 55% of the alcohol in the mash. Do you math and when the take off dripping will dwindle, increase the reflux ratio back to slow dripping 2-3 drops per second. At this point it would be safe to place a "tails" bottle under the take off.

Total is about 15% of the alcohol in the mash. The rest is left in the boiler and is thrown away. Follow these instructions and collect a few first run batches. Dilute a few this with clean water and add 1 tea spoon per liter of baking soda and 1 tea spoon per liter of salt. Let it sit for a week occasionally shaking it. Re-distill "second" time. Please don't run pure alcohol in the boiler!

Please accept all responsibilities for your actions. If you feel that you need more help use this address: bokakob@yahoo.com
 If you feel like helping me please use PayPal and the same address. Thank you
 More information will be available here: <http://briefcase.yahoo.com/bokakob>

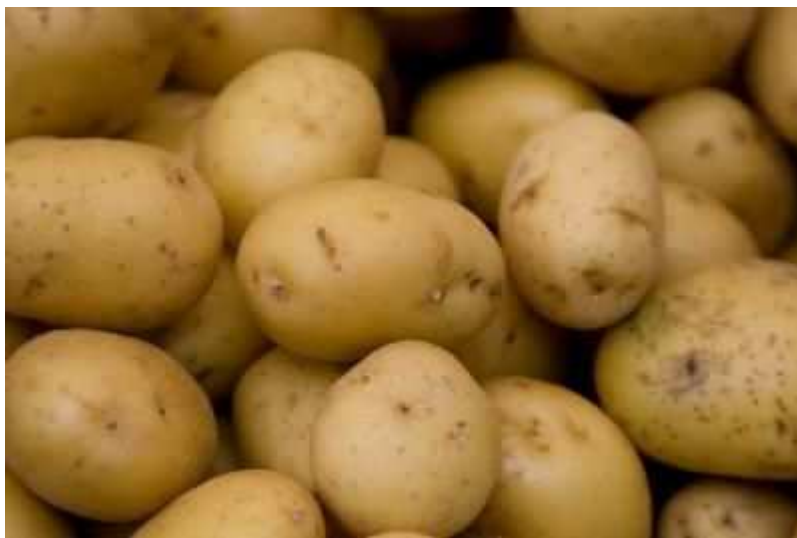
Both Pot & Reflux stills are relatively simple and both produce liquor. The difference is just that for a

reflux still you have a packed column before the condenser, and you get some of the vapour to condense and drip back through the packing. You do this if you want to make clean/pure/tasteless alcohol of around 75%-96% purity for adding flavours to, or making gin/vodkas etc.

If however you just want to make straight forward whiskey / schnapps etc with some flavour, you can use either a pot or a reflux still.

An interesting note is that some copper in the vapour path is beneficial. See the [Materials](#) page for more details why. Some people who have built all-stainless steel stills have found there to still be some smell +/- or odour in their neutral spirits, which goes away when they put some copper in (usually replacing the scrubber packing with copper scrubbers).

How to Make Homemade Hard Liquor



How to Make Homemade Hard Liquor

"Hard liquor" refers to distilled spirits which generally average about 40 percent alcohol by volume. Common hard liquors, including whiskey, gin, rum and vodka, are made from corn, barley, rye, sugar cane and potatoes. This article teaches you how to make potato vodka, which is a fairly easy hard liquor to make at home. If you would like to experiment with this recipe, try substituting sweet potatoes for white potatoes. This recipe makes about a quarter of a gallon, or one liter, of liquor.

Things You'll Need

- 2 pounds potatoes (or sweet potatoes)
- Purified water
- Pressure cooker

Pot or reflux home distillery kit
Fine mesh strainer
1 teaspoon of yeast (brewer's or baker's)
Funnel
5 cotton balls
Activated carbon
Collection container (glass sealable bottle is best to prevent strange flavors)
Show (7) More

Instructions

Preparing the Potatoes

○ 1

Peel potatoes and cut them into cubes.

○ 2

Place the potatoes into the pressure cooker and cover them with a generous amount of water. Make sure the potatoes are submerged.

○ 3

Turn the heat to high on your pressure cooker. Cook the potatoes until they are almost liquefied. This process should take between 40 minutes and an hour and a half, depending on the size of your cubes.

○ 4

Let the potato mixture cool. Once it has cooled, strain the potatoes using a fine mesh strainer. Keep all the potato juice, as this will become your liquor.

○ 5

Add yeast. Loosely cover the mixture. Air should not be able to get in, but make sure you allow a space for air to escape. Fermentation will cause gas expansion and will blow your lid off if it is on too tight. Let this mixture, also called "mash," sit for two weeks.

Distilling The Liquor

○ 6

Use either a pot still or a reflux still to distill your liquor, ridding it of impurities and increasing the percentage of alcohol in your liquid. If you have a pot still, you will need to distill your mash at least two times (try three or more times if you would like a purer, clearer vodka). If you are using a reflux still, you only need to distill your liquid once.

○ 7

Thoroughly clean all parts of your still before each use and between repeated distillations of the same batch of liquor to prevent any off flavors.

○ 8

Pour the mash into the large still pot. Place its collection pan underneath the hose. Turn the still on.

○ 9

Discard the first and last 50 milliliters you collect (the first and last 50 milliliters contain

methanol, which is very dangerous and can even cause blindness). Once all the juice has steamed from the pot, the liquefied steam you have collected is your vodka.

- 10

If you used a pot still, repeat this process at least once more.

Filtering Your Vodka

- 11

Put the cotton ball in the bottom of the funnel.

- 12

Place a piece of activated carbon on top of the cotton ball.

- 13

Pour your vodka through your filter, letting it drain into a clean collection container.

- 14

Repeat as many times as you like.

Dilution

- 15

Dilute your vodka with purified water. Distilled vodka is strong, making it both dangerous and hard to drink. Slowly dilute your vodka, stirring and tasting as you go, until you reach your desired liquor.

- 16

Add a spicy pepper, a small amount of herbs such as rosemary or basil, crushed berries, a vanilla bean or a cinnamon stick.

- 17

Let your flavor additions soak in the vodka for at least a week. You can also divide your vodka into two or three small batches to experiment with different flavors.

How to Distill Alcohol With a Coffeepot



Flavored liquor is made at home by distilling alcohol essence.

Coffeepot distilling is a convenient and practical way to make alcohol essence. Alcohol essence is a flavoring that is made by adding fruits and any other desired foods or spices to alcohol and distilling it. The result is a flavored alcohol essence used to flavor liquor. This method of distillation requires few starting materials and does not create dangerous byproducts, making it a simple at-home activity. By distilling alcohol essence at home, it's possible to avoid the high cost of buying flavored alcohols and to add a creative touch to customized liquors.

Things You'll Need

- Orange peels
- Juniper berries
- Licorice powder

Glass jar
Large wood cork
Drill
Condenser
Wood glue
Plastic distilling tubing
Cooking thermometer
Show (7)
More

Instructions

1.

- 1

Add orange peels, juniper berries, licorice powder and 75 to 90 percent alcohol (150 to 190 proof) to a clean glass jar, making "mash." Keep the glass jar in a dark place at room temperature for one to two weeks. Although any amount of alcohol and flavorings may be used, a rough guideline to follow is 5 to 10g flavoring per cup of alcohol.

- 2

Insert the cork into the top of the coffeepot. Test for an airtight seal by placing the coffeepot into a sink filled with water. If the coffeepot is airtight, little to no water will leak in.

- 3

Drill a hole in the cork fitted to the coffeepot in Step 2 to fit the size of the nozzle attachment on the condenser. Attach the condenser to the cork in the coffeepot, and make sure it's airtight by again placing the coffeepot in a sink filled with water. Should the hole be too big, apply a small amount of wood glue around the condenser and allow it to dry.

○ 4

Pour the mash in the glass jar into the coffeepot, and add a little bit of water to slightly dilute the mash before distilling.

○ 5

Attach the plastic tubing to the two nipples on the condenser. One tube should attach to a sink nozzle while the other tube captures heated waste water from the condenser. Allow the hot waste water to flow down the drain during distillation.

○ 6

Heat the coffeepot to 194 degrees F on a stove while water is running through the condenser. Measure the temperature periodically to ensure it is not below or above 194 degrees F. Collect the distillate essence in a glass as it flows from the plastic tube connected to the condenser.

○ 7

Add the alcohol essence to any type of liquor to impart its flavor. Use a ratio of 10mL essence for every liter of 40 percent alcohol. If the liquor becomes cloudy, choose a higher alcohol level or add less essence.

Tips & Warnings

- Experiment with different flavorings to create one-of-a-kind flavored alcohol. Also try different ratios of flavors and changing the amount of time the mash is allowed to sit.
 - If you cannot obtain a distilling license, try substituting water for the alcohol. Distilling water is perfectly legal and produces a flavor essence similar to that of alcohol.
 - Distilling alcohol is a risky procedure and could be illegal without a distiller's license. Although you are simply distilling alcohol to produce a flavor essence, the essence will be of a high alcohol percentage. Check state and local laws before performing the procedure.
 - Keep a fire extinguisher nearby while distilling, and never smoke or light anything while distilling. Always distill in a well-ventilated area away from any possible source of ignition. Heated alcohol burns very rapidly once it has caught fire.
-

How To Make a Still From a Pressure Cooker

A still is an ancient invention whose design has remained fundamentally the same throughout the ages. Thanks to modern pressure cookers, you can make a simple still to distill small amounts of alcohol for use in homemade [DIY](#) cleaning solutions or crafts projects. As the liquid boils, alcohol-filled steam rises into the copper tubing. It then cools and emerges from the tubing as a liquid.

Things You'll Need

-
- Copper tubing, approximately 8 feet
 - Large (2-quart) juice can
 - Plastic bucket

Drill Clay-type adhesive, such as Blu-Tack Stack of books or small pedestal Pressure cooker Brewing
cork Empty container Show (6) More

Instructions

1.

○ 1

Wrap the copper tubing around a large juice can (the 2-quart size). Leave approximately 18 inches of the tubing uncoiled and straight at each end.

○ 2

Drill a hole in the side of the bucket, approximately 1/2 inch from the bottom. Make the hole the same diameter as the copper tubing.

○ 3

Place the coiled copper tube into the bucket. Feed the lower straight end into the hole you drilled in Step 2.

○ 4

Seal the opening around the copper tube with a plastic clay-type glue such as Blu-Tack.

○ 5

Set bucket on a stack of books or small pedestal to raise it above the level of the countertop. Place a bowl or other container under the end of the copper tube that pokes through the bucket. The alcohol will drain out of the tube into the container.

○ 6

Add enough cold water to the bucket to completely submerge the coiled portion of the copper tubing.

○ 7

Insert the other end of the copper tubing into the brewing cork. Place the cork on the stem (vent) of the top of the pressure cooker [↗](#).

○ 8

Fill pressure cooker less than half full of materials to be distilled. Replace and lock the lid of the

pressure cooker. Cook [over](#) low to medium heat.

Tips & Warnings

- Alcohol is highly flammable; take precautions near open flames. This method does not produce potable alcohol; do not use this method to produce alcohol to drink
-

How to Make Homemade Rum



Create the taste of the tropics at home.

Rum is a key ingredient [in](#) many cocktails and punches, and a vital addition to any well-stocked liquor cabinet. But just because the expensive Caribbean rums are the most popular doesn't mean you can't make your own. Rum is a fairly simple spirit to distill for your own use, provided you have some time, some patience, some chemistry, and a whole lot of molasses.

Things You'll Need

- Molasses
- Yeast
- Water

StillGas burnerThermometerBottlesBarrelsShow (5) More

Instructions

1.
 - 1

Ferment the molasses by adding water and yeast. In order for the molasses to ferment properly, you will need to reduce the amount of sugar [to](#) 25 percent or less of the total mixture. This can be done by adding an equal amount of water to your amount of molasses; if the molasses is 50 percent sugar, an equal amount of water will reduce it. You can find the total amount of sugar on the label of the molasses that you use. Once the amount of sugar is reduced, add the yeast and

leave the mixture in a tightly sealed container. The yeast will consume the sugars and create alcohol and carbon dioxide. Fermentation will take about two weeks.

○ 2

When the molasses is fermented, add the mixture to your still, ensuring your tank is only three quarters full at most. Using a gas burner, heat the mixture between 172 and 179 degrees Fahrenheit. Maintain the mixture in this temperature range for as long as possible, generally between one to two hours. Once you are outside this range, turn off the burner.

○ 3

Throw out any liquid that came out of the still at below 172 degrees. This is poisonous. For the best flavor, also throw out the first 100 to 200 mL of any liquid distilled at 172 degrees or above, as this will contain the most of these poisons. Similarly, anything above 179 degrees should be thrown out. It is not poisonous, but it is foul-tasting and you don't want it contaminating your rum.

○ 4

At this point you will have light rum. If you want an amber rum, you will need to age the rum in wooden barrels, preferably oak. Aging is up to you; rum can be aged as long as ten years. These barrels should be stored in a cool, dark place to allow proper aging. If you want a dark rum, simply add molasses to the light rum until you have the desired color, with no need to age it in a barrel. Once you have the desired colors, bottle the rum and put it on your shelf.


Tips & Warnings

- You can continue to distill your alcohol to remove the trace elements of acetone, methanol, and other poisons. Removing methanol in particular will reduce hangovers.
- While rum distillation is legal in most of the country, always check local laws before starting any distilling project.
- Be aware that you will also be distilling alcohols like methanol and acetone, which are poisonous if consumed. Monitor the temperature of your mix carefully and if you think you have distilled incorrectly, do not drink the products of the still.

How to Make Homemade Distilled Stove Top Alcohol



How to Make Homemade Distilled Stove Top Alcohol

Homemade  distilled alcohol is more commonly known as moonshine. This type of alcohol is also known as ethanol and is used as an alternative fuel. Moonshine is quite simple to make because the ingredients are readily available and inexpensive. The two main ingredients are sugar and yeast. It is illegal to manufacture distilled alcohol in the United States. The instructions given are not intended to be used for producing moonshine and are only for educational purposes.

Things You'll Need

- 5 pounds cornmeal
- 20 pounds sugar
- 20 gallons water

1 ounce yeast
Charcoal
Large pots
Coiled copper pipe
Pressure cooker
Show (5) More

Instructions

1.
 - 1

Boil the water. This will require several large pots. The water should boil for five minutes. Remove the pots from the stove.

- 2

Add the cornmeal to the boiling water and stir. This mixture is called mash. Allow the mash to cool. It should be warm to the touch. Do not ingest this mixture.

- 3

Dissolve the sugar in warm water . Mix in the yeast. Do not add yeast to boiling water. It will kill

the yeast and the mixture will not ferment. You can use brewer's or baker's yeast, but brewer's yeast will ferment longer, and yield a stronger alcohol content.

○ 4

Add the sugar and yeast solution to the warm mash and stir. Mix thoroughly.

○ 5

Store the mash in a cool, dark place to ferment for five to seven days. Do not move the mash until it stops bubbling. The mash mixture is now referred to as sour mash.

○ 6

Heat the sour mash to 173 degrees F in a pressure cooker. The alcohol will rise to the surface of the sour mash mixture.

○ 7

Place the copper pipe over the vent on the top of the pressure cooker. Place a large pot at the other end of the copper pipe.

○ 8

Run cold water over the pipe. The vapor from the sour mash mixture will run through the copper pipe and will form a liquid as it passes through the cold copper pipe. The liquid will collect in the pot.

○ 9

Use several pieces of charcoal to filter the liquid. Pour the liquid through the charcoal three or four times to remove dirt and impurities. The liquid is now distilled alcohol.

○ 10

Store the distilled alcohol in glass jars or bottles.

Tips & Warnings

- Store and save the mash mixture remaining in the pressure cooker. It can be reused up to eight times.
- Use copper pipe that is 1 to 1 ¼ inches in diameter.

How to Build a Small Still



Purify water by building your own still.

Distillation is a process that you can use if you need to be sure that your drinking water is pure, or if you want to separate components of a liquid. You might be familiar with the idea of homemade stills that are built to make alcohol, but distilling alcohol, according to Monster Guide, is illegal in most countries, including the United States (the exceptions are Italy, Austria and New Zealand). You can build your own small still out of simple materials that you may already have around the house.

Things You'll Need

- 1-gallon pot
- Tempered glass
- Magnet

Thermometer Bowl with round bottom Ice Large bowl Small bowl Plastic wrap Rubber band Rock Show (8) More

Instructions

Stove-Top Still

- 1

Place a 1-gallon metal cooking pot on a stove-top burner. Place a tempered glass in the very center of the pot. Put a small magnet in the glass so that it stays in place in the center.

- 2

Pour the liquid that you want to separate into the pot. Make sure that you don't get any inside the collection glass. Submerge your thermometer in the liquid and turn the burner on high.

- 3

Turn the burner down to lowest setting once the temperature of the liquid reaches 120 degrees Fahrenheit. Fill a large, round-bottomed bowl with ice and place it over the opening of the pot. The ice will cool the heated vapors and cause condensation in the bottom of the round bowl.

Solar-Powered Still

- 4

Place a small bowl in the center of a larger bowl. Pour the impure water you've collected into the larger bowl. Make sure the smaller bowl doesn't begin to float. If it does, empty some of the water out of the larger bowl.

- 5

Cover the opening of the larger bowl with plastic wrap. Secure it around the edges with a rubber band or a piece of string. Place a small rock on the center of the plastic so that it dips down toward the middle of the smaller bowl.

- 6

Set the bowl in direct sunlight and leave it there for at least four hours. Check it when the time is up and you will see water collecting in the smaller bowl. The impure water has evaporated, collected on the plastic and dripped into the smaller bowl. Any dirt that was present in the water in the larger bowl will not be in the water in the smaller bowl.

Homemade Alcohol Still

Making a homemade alcohol still is not difficult. According to the homedistiller.org website, the simplest type of alcohol still is the pot still. This basic system will produce a liquid that is between 40 and 60 percent alcohol. A reflux still uses a series of pot stills to further purify the alcohol products. A more complex still, the fractioning still, separates the alcohol and water in the distillate and returns the water to the pot, resulting in alcohol that is up to 95% pure.



The Heat Source

- Every homemade alcohol still requires a heat source to warm fermented liquid until it begins to vaporize. This heat source could be a wood flame, if you plan on watching the distillation process carefully, the old-fashioned way. However, a natural gas or propane burner is more reliable and easier to use. In some installations, an electric heat source could work to heat the pot. The best heat source in your situation depends on what is available in the location where you are building your still.

The Pot

- The pot is the covered container that holds fermented liquids and solids. The exact contents of this material, known as the mash, will vary depending on the type of alcohol you are making. Mount the pot over the heat source to heat the mash to the boiling point of alcohol, or 78.3 degrees Celsius. This temperature must remain below the boiling point of water (100 degrees C) so that the alcohol in the mash will vaporize but the water content will stay in the pot. Therefore, many home distillers find it handy to fit a temperature gauge into the pot.

The Condenser

- The condenser is usually a coiled metal tube inserted through a small hole in the cover of the pot. As the alcohol vapor rises above the hot mash, it escapes through the condenser tube. The vapor cools and condenses back into a liquid as it travels through the tube. This liquid then drips into a holding container. If you wish, you can distill it again to purify the product and increase its alcohol content.

Fermenting Mash

- The mash is the combination of fermented materials that you place in the pot to be distilled. The composition of your mash will depend on how you plan to use the alcohol. If you are distilling alcohol for a fuel, you can use old newspapers, wood, corn stalks and other discarded organic materials. Alcohol distilled from these ingredients is toxic and should not be consumed. Alcohol for human consumption is made from grains like corn, wheat or barley,

How to Brew Beer With No Kit



How to Brew Beer With No Kit

Homemade beer brewing is a lot less difficult than many believe it to be. Although there are a wealth of expensive kits available, you can successfully brew beer without them. Many of the ingredients needed to brew your own beer are common household items while others are more specialized and expensive, but will likely be good investments if you plan on brewing at home often. Another perk of home brewing without kits is the freedom to personalize your brews.

Things You'll Need

-
- Bleach
 - 10 gallon plastic bin

- 22 quart or larger pot

40 oz. can of malt extract (in the flavor of your choice) 8 cups of either white sugar or corn syrup (corn syrup is preferred) 12, 2 liter plastic bottles Thermometer 1 packet of brewer's yeast Hydrometer 24 tsp. of white granulated sugar Hose clamp 74 inches of vinyl tubing Show (9) More

Instructions

Sanitize and Brew

- 1

Wash and sanitize all of your tools in warm soapy water. Rinse well before combining 1 tbsp. of bleach with 1 gallon of water and soaking materials in the solution. Rinse away all traces of bleach.

- 2

Fill your bin with 2.7 gallons of cold water. Fill the pot with 7.5 quarts of water and put it on the stove to boil.

- 3

Pour the malt extract into the pot of boiling water. Stir and allow to continue boiling for about 20 minutes. Add sugar or corn syrup to the mixture and continue to stir. When that ingredient dissolves, immediately pour the solution into your bin of cold water.

- 4

Fill the bin with liters of cold water (you can use your 2 liter bottles for this) until the temperature of the brew reaches about 68 degrees Fahrenheit. Add the yeast to the bin and stir.

- 5

Place the top on the bin. Allow the beer to brew for six days at room temperature. Do not open the bin during that time.

Bottling

- 6

Find out if your beer is ready after six days. Use a hydrometer to determine the relative density: light beer should be about 1.008 while darker beers will be between 1.010 and 1.015.

- 7

Place the bin on a steady table. Arrange old newspaper or other protective materials around the base of the table to catch spills. Arrange the 2 liter bottles on the floor near the table in preparation for bottling.

- 8

Add 2 tsp. of white granulated sugar to each 2 liter bottle. Attach the hose clamp to the vinyl tubing and siphon beer from the bin to the bottles. Be sure to leave a small amount of space at the top of each bottle for air.

o 9

Tightly cap off each bottle. Invert each bottle to dissolve the sugar in the beer.

o 10

Store the 2 liter bottles in a warm, dark place for two days before drinking. Keep them in a cooler, dark area after the two-day period.

Making a Homemade Beer Still



Making a Homemade Beer Still

Materials



o

Purchase one 10-gallon polyethylene pail (food-grade) with an air-tight lid and a fermentation lock from a hardware store or beer-making supply shop. Get a 5-gallon pail as well. A lock is mounted on the 10-gallon pail's lid to keep air out and allow carbon dioxide to escape from the fermenting beer. You will also need a saccharometer to measure the amount of sugar concentration, and a thermometer accurate in the 50-230-degree Fahrenheit range. You will need a syphon for bottling, as well as several 12-to-16-ounce bottles, caps and a capping machine.

Preparation

- o Sterilize all items involved in the brewing process by soaking them for 15 minutes in a chlorine bleach solution--two cups of bleach for every 5 gallons of hot water. Rinse all items completely in hot water twice before proceeding in the brewing process.

Using the Still



○

Brew your beer recipe² by perching the 10-gallon pail atop a chair or stool. Test the sugar levels as you brew by pouring a small amount into a glass cylinder and inserting the saccharometer. Follow your recipe, and when all appropriate sugar and alcohol levels are achieved, cover the pail with the tight lid and fermentation lock. After several days, use your syphon to drain liquid from the top of the pail into the smaller pail, which is placed one level below. Make sure the syphon skims the surface liquid only and does not dislodge the sediment at the bottom of the pail. Check the sugar content each day until it falls below 1 percent, when the liquid will be fermented. Use the siphon to fill the bottles, add sugar if the recipe calls for it, and cap and store the bottles for three or more weeks before drinking.

Warning!

- Remember to transfer your beer to the smaller pail before bottling, as this helps reduce the risk of too many gas bubbles causing the bottles to explode!

How to Make Homemade Vodka

While many people brew their own beer and experiment with wine making, far fewer tackle the challenge of making their own hard liquor. Distilling vodka requires only simple ingredients but somewhat more substantial equipment. Allow space, time and room for failure as you learn to make vodka. Once you can successfully make homemade vodka, experiment with adding flavors² and creating infused vodkas.

Things You'll Need

- Small home still, available from many home-brewing supply shops
Distilled water
Flaked wheat
Wheat malt
Citric acid
Gypsum
Bleach
Large stock pot
PH testing strips
Dairy thermometer
Two 30-plus liter fermenters
One packet vodka yeast
Wine-making hydrometer and cylinder
Straining bag
Activated carbon filter

Instructions

1.

- 1

Assemble your vodka still. A still should have a heat source, a boiling chamber, cooling pipes and a collection bottle. Thoroughly sterilize all equipment using bleach or a sanitizing solution made for baby bottles and similar items. Be sure to also sterilize your stock pot² and any utensils you will use to make your mash.

- 2

Fill a large stock pot with 23 liters of tap water to make your homemade² vodka. Add 2 tsp. of gypsum to this water and mix well. Test the pH and adjust, if needed, with citric acid. Add citric acid 1/4 tsp. at a time until it's reached a pH of 5.8 or 6.0. Place the pot on the stove, cover and allow to heat to 165 degrees F.

○ 3

Remove from heat and stir in 8 liters of flaked winter wheat. Stir for approximately five minutes, then every five minutes until the temperature is 152 degrees F. Add 1.5 liters of malt to this mixture. Leave for 90 minutes, stirring occasionally. The mixture then may be left overnight to allow it to cool to fermentation temperatures.

○ 4

Use the hydrometer to check the originating gravity of the clear liquid on top of the mash once the mixture has thoroughly cooled. The measurement should be around 1.060-1.070. Transfer the mash to the fermenter and pour quickly from one fermenter to the other four to six times to aerate the wheat mash. Add a packet of vodka yeast and stir well. Allow the mixture to ferment for 72 to 84 hours.

○ 5

Strain the mash and place into the still. Heat the mash. The alcohol will evaporate and collect in the collection bottle. Be sure to filter through a carbon-based filter. Dilute at a ratio of 3 parts vodka to 4 parts water and bottle in sterilized bottles.

How to Build a Homemade Still



Stills are used in commercial and home production of alcohol.

Stills are an apparatus that uses a heating and cooling process to separate various liquids from other liquids, or solids from liquids. Stills are also the main equipment used in the production of alcohol. By boiling the fermented liquid, the still separates and concentrates the alcohol in a vapor; when cooled, the resulting liquid will have a high percentage of alcohol. Large stills are used in commercial applications and there is a committed number of hobbyists who produce their own personal alcohol through homemade stills.

Things You'll Need

-
- Five to six feet of copper tubing
 - Rubber stopper
 - Tea kettle, non-electric type

Single cooking element with temperature dial
Cooking thermometer
Large metal or plastic jug
Bottle or glass flask
Show (4) More

Instructions

1.

○ 1

Form the copper tubing into a coil. You can use any cylindrical object as your template to bend the copper. Copper is a very soft metal; during the process make sure you do not bend the copper so that the tube itself becomes closed or bent. You will want to leave six to eight inches of straight pipe at both ends.

○ 2

Insert one end of the copper coil into a jug. The jug can be any size, provided that the opening is large enough for the copper piping to be inserted in. Drill a hole in the bottom of the jug to match the diameter of the copper tubing.

○ 3

Create a stand for the jug that will allow you to place the bottle or flask under the drilled hole.

○ 4

Drill two holes into your rubber stopper. One hole needs to be small enough to securely hold the cooking thermometer. The other hole needs to be slightly smaller than the diameter of the copper tubing.

○ 5

Pour the mash into the kettle. Insert the stopper into the kettle's spout. Insert the cooking thermometer into the stopper.

○ 6

Crimp the copper tubing so it can be inserted into the second hole that was drilled in the rubber stopper.

○ 7

Place the kettle on the single element, turn the element on and heat the mash to a temperature between 170 and 200 degrees Fahrenheit. The mash will create a vapor that will travel through the copper tubing, and, as it cools, will collect in the jug and drip into your final container.

Homemade Still for Essential Oils



Essential oils

Essential oils have been used for many generations. The traditional way of extracting the oil from the plants is through distillation using a still. If you have a supply of flowers or herbs from your garden, you can make a simple homemade still to extract the essential oils yourself.

Ingredients

- Select pesticide-free flowers or herbs to use in the distillation process. If you did not grow them yourself, shop for organic or food-grade plant materials. Use distilled water for the distillation process; chemicals or minerals from tap water are not desirable.

Assembly

- Place a large, deep stockpot on the stove, and then place a glass or ceramic heat-proof dish in the bottom of the stockpot. There should be space left between the walls of the pot and the dish; this is where the flowers or herbs go. The taller this dish is, the more you will be able to distill at one time. Fill the dish halfway with water to weigh it down.
Fill the area between the sides of the pot and the dish with the herbs or flower petals that you wish to extract the essential oils from. They should not be taller than the dish. Now, pour water over the plant material to a depth of half of the dish that is in the middle.
Place a shallow bowl on top of the glass dish. This bowl should seal the top of the glass dish and extend beyond the lip of the dish. Large rimmed soup bowls usually work well. This shallow bowl is the container where the water and essential oils will be collected.

The Process

- Bring the water in the homemade still to a boil, and reduce to a simmer. Place a large, stainless steel bowl over the top of the stockpot. This bowl should be large enough to seal the stockpot; however, the bottom of this bowl should not touch the shallow bowl that is inside of the stockpot. Add ice to the stainless steel bowl to cool the steam inside the still as it rises. This will cause the essential oils to cool and drip into the shallow bowl.
Simmer the contents of the still for two to three hours. During this time, keep the ice in the

stainless steel bowl replenished. Watch the water covering the flowers or herbs; if it boils away, add more distilled water, being careful not to pour it into the shallow bowl. Make sure that the flowers do not burn.

The Results

- Turn the heat off and let everything cool before disassembling the homemade still. Carefully remove the shallow bowl that now contains a mix of herb or flower water and essential oil. The oil will be floating on top of the water and can be decanted off. The water can be used for cooking or for creating scented items.

How to Make a Homemade Still Using Wine Bottles



Empty wine bottles can make a convenient still.

Distillation is a process which heats a liquid substance to its boiling point so the resulting vapors can be collected and condensed into a separate container. Distillation has been used for isolating perfumes, making moonshine and removing impurities and organisms from drinking water. Commercial companies use large equipment to achieve distillation, but stills are also available for home use. Rather than investing in the cost of personal home distillery equipment, you can make your own still using nothing but a couple of empty wine bottles, a condenser hose and a heat source.

Things You'll Need

- Two empty wine bottles
- Condenser hose
- Pot

Cheesecloth or wire mesh strainer Duct tape Circular clamp [Show \(3\) More](#)

Instructions

1.
 - 1



Various methods may be used to sanitize previously used wine bottles.

Sanitize used wine bottles in the dishwasher by running them through a dishwasher cycle set on the hottest setting. Wash empty wine bottles in the sink if you do not have a dishwasher. Fill the sink with a mixture of antibacterial soap and hot water. Immerse the bottles in the water and allow them to soak for at least 10 minutes. Rinse the bottles in plain water to remove all soap residue. Leave the bottles to air-dry.

You can also sanitize empty bottles by placing them in a pot of boiling water.

- 2



Rinse a mesh strainer thoroughly between uses.

Strain the liquid you plan to distill if necessary. It's important to remove debris and impurities that may affect the distillation process. Pour the liquid through a fresh piece of cheesecloth or mesh strainer into a large sanitized bowl or pot. Discard the used cheesecloth, and cut a new section if successive straining is required. Transfer the strained liquid into one of the empty wine bottles.

- 3



A flexible circular clamp, available in most hardware stores.

Fit the neck of the wine bottle with a flexible condenser hose made of plastic, vinyl or light-weight metal. Choose a condenser hose that can stand up to high temperatures and one that will move and bend slightly as needed. Make sure the hose fits over the opening of the wine bottle. Seal the connection between the hose and the wine bottle with heat-resistant duct tape.

You can also use flexible circular clamps available in most hardware stores.

- 4

Apply a heat source to the wine bottle containing the liquid for distillation. The easiest method is to use a pot of boiling water on the stove. Place the wine bottle in the pot, and bring the water to a slow boil. Let the heat of the boiling water warm the wine bottle so the liquid inside begins to release steam into the condenser hose. Be sure to monitor the pot of boiling water at all times.

- 5

Position the other end of the condenser hose over the mouth of the empty wine bottle. Secure the hose to the second wine bottle with duct tape or circular clamps so the condensing liquid drains through the hose into the empty wine bottle. When the distillation process is complete, you can seal the wine bottle with a cork for simple and convenient storage.

**WHERE THERE'S SMOKE, THERE'S
SPINACH.**

By Eric Gillin

10.23.03

.....

Smoking ain't cheap.

This isn't a new trend. As we are all well aware, over the last ten years, the average price of a pack of cigarettes has more than quadrupled, hitting \$8 in many places, like New York City. Across the country states are banning cigarette smoking in bars and are using sin taxes to subsidize tax cuts for the affluent, who could be the only people that can afford to smoke if this trend continues for another decade.

While it's possible to find cheap smokes in a state like North Carolina, where the average price of a pack is \$3.15, or in Virginia, where the state hasn't boosted cigarette taxes in 37 years, the simple fact is smokers invariably end up buying cigarettes at the last minute. And at \$8 a pop, or 40 cents a smoke, it's getting patently ridiculous to pay a premium to kill yourself, especially when you can't even smoke indoors anymore.

But if you think that's bad, try being one of the nation's millions of incarcerated inmates -- many of which have been forced to quit cold turkey in smoke-free prisons. Cigarettes in jail can cost as much as \$40 a piece.

As with pruno, a prison wine made from all manner of things, inmates have turned to common items to get their fix, crafting smokes from dried spinach, spices and even coffee grounds. And as with pruno, prisons have cracked down, with Kansas prison officials removing spinach from the prison menu during a 1994 crackdown, trying desperately to stop the practice.

In an interview with the Associated Press, explaining the change to prison menus, Sgt. Ruth Divelbiss commented, "It smells terrible. You can't print what it smells like. When you don't have tobacco, you do what you have to do."

Indeed. Once again, The Black Table does what it has to do and doffs the crash helmet to investigate further.

Smoke up, Johnny!

INGREDIENTS, ALL OF WHICH CAN, OR SHOULD, BE STOLEN.

Envelopes
Paperback Book
Toilet Paper
Spinach
Dried Mint
Dried Oregano
Tea Bags
Cotton Balls
Lighter or Matches

STEP ONE: PREPARE YOUR "TOBACCO."

Cigarettes, or at least the idea of smoking crap out of a rolled up bit of paper or leaves, have been around for thousands of years. Unlike other inmate-inspired projects, like making pruno, rolling homemade cigarettes is uncomplicated, provided you understand the basic steps, which are the same whether you're



This is an ad.

rolling a Spinach Cig or a Menthol Knock-Off.

Start with the most basic, tried-and-true homemade smoke -- the spinach cigarette. But before you can stop, drop, and roll that salad up, the spinach needs to be dried out.



1. Buy one pound of spinach and a newspaper you've never read before, preferably something with a lot of names, numbers and places in it. **2.** Cover an article you can't comprehend with some leafy green spinach and **3.** feel good about combining two things that you don't enjoy -- spinach and reading the business page -- in one activity designed to mimic something you do enjoy, which is smoking. **4.** Wait three days for your spinach to learn all about how America's push for a strong dollar may weaken economies around the globe, so that you can learn it too, when you smoke the spinach.

By the time your spinach understands the economics of currency devaluation, it should be completely dry. This will take your spinach about four days. Once dried, it is completely possible to scrunch the spinach between your fingertips, but those of you with a penant for using kitchen tools should note the following directions.



1. Take the dried spinach, which will look exactly like weed and **2.** throw it into that cute little blender/chop chop combo that your parents got you when you moved into your "big new apartment" and promptly lost all the pieces to, except for the blender, which is where you keep your change after Margarita-Mania 2000 went horribly awry. **3.** You will now have utterly useless, ground up, dried spinach. Wee.

STEP TWO: CHOOSE YOUR PAPER

In prison, there are a many schools of thought on what to roll your cigarettes with, but for our purposes, we will focus on just three:

Part One: The T.P. Method.

Many prefer to use toilet paper, which is easy to obtain, easy to roll and extremely quick burning. Try to find a nice double- or triple-ply, if you can, and avoid using quilted or ribbed papers, which may be harder for newcomers to roll. While using toilet paper is the simplest method, the end result is also the least desirable, looking like some cigarillo/tampon hybrid that's hard to take a big pull off of.



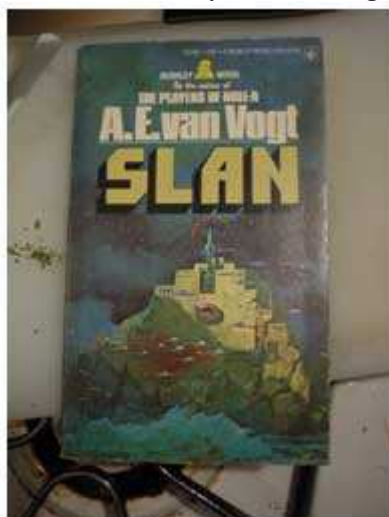
1. Start by putting a small-to-medium sized amount of dried spinach on the toilet paper, then carefully **2.** fold the left side of the paper over, **3.** followed by the right side of the paper. Next, **4.** fold up the bottom, creating a little "pouch" for the dried spinach, which **5.** you can then roll up -- taking care not to rip the paper like a useless clod -- into **6.** a finished toilet paper-based smoke.



Part Two: Adventures in Science Fiction.

Only extremely dedicated spinach smokers need apply for this method of rolling, which uses pages from paperback books to wrap the spinach and involves a complicated array of techniques and procedures. The process may be long, but the end result is worth it, creating a tightly wound smoke that you can read before lighting.

The absolute best paper to use in this kind of cigarette is the thin, onion-skinned kind that is usually found in huge dictionaries or spiffy,



expensive versions of the Bible. Since we don't know what would happen if you smoked Jesus -- and because we don't want to risk eternal damnation to find out -- we highly recommend you use one of those old paperbacks you have lying around.

Since we couldn't bear to set fire to our nine-volume set of Dragonlance books, we turned to a slim volume called *Slan*, which was written by A.E. van Vogt in 1946. In the novel, written in 1946, genetically-advanced telepaths called "slans" are persecuted by ordinary folks and targeted for death. All hell breaks loose when Jommy Cross, a nine-

year-old slan, visits the capital city of Centropolis, loses his mother to anti-slan violence and gets involved in a plot to take down Kier Gray, Earth's dictator.

Sounds smokable to us!

1. Start by cutting out a small strip of paper, about the size of a cigarette rolling paper. We used part of chapter 10, when someone points a gun at little Jommy and there are all these slan people around and it's totally cool. Set aside this paper for later. **2.** Grab a big ol' stack of envelopes and **3.** heavily lick the back of a few of



them, which should make the glue very tacky. **4.** Use your finger to scrape the glue from the back of the envelopes and **5.** wipe it on the strip of paper you previously set aside. **6.** Place a small amount of spinach on the paper, reminding yourself not to be a Greedy Gus

or you'll never get that thing rolled correctly. **7.** Pinch the paper together and start rolling it together, making sure not to let the spinach hit the glue. **8.** Right before you seal the cigarette, reactivate the glue from the envelope to ensure a perfect seal. **9.** You will now have a cigarette that's also a sci-fi classic.

Part Three: You Lazy Sod!

Fine, so you're not the kind of person who wants to smoke toilet paper and can't be bothered to scrape glue from the back of envelopes. Maybe you're not in prison. Maybe you're a boring, middle class kid looking for some kicks in a bag of spinach. Then by all means, please feel free to go to the store and buy some rolling papers, but keep in mind you're losing about a billion coolness points. Instead of doing some insane craft project to make a cigarette from household items in an attempt to see how it's done in prison, you're merely sitting around the house scheming to smoke the spice rack.



1. Go buy some Zig Zags and think about how lame you are for cutting corners. **2.** Go ahead, roll it up. **3.** Lamer.

EXTRA CREDIT: THERE'S MORE TO THIS THAN SPINACH.



The Menthol Knock-Off: Menthol cigarette smokers are a different breed, opting to smoke a cigarette whose flavor is derived, in part, from fiberglass and all kinds of crap that even unfiltered smokers wince at. So straight spinach ain't gonna cure their cravings. Take out some spinach, mix in some dried mint, and viola -- a menthol smoke that doesn't have insulation in it. Our panel of reviewers found this blend to "taste minty in a bad way" with an aftertaste that was "like being locked in a hair factory during a



three alarm blaze."

The Grade Schooler: Back in the day, elementary school kids looking for a kick would sell each other oregano in little bags and pass it off for pot. Well, when you're in jail, oregano might as well *be* pot. Before lighting, smokers found this classic blend to "smell like pizza smells in scratch and sniff stickers," but upon lighting, the smoke was "acrid and assy" giving the smoker "migraines for hours and a stupid feeling that will linger for all eternity."



The English Special: Spinach can have a bit of a stinky aroma for those unaccustomed to smoking crap rolled in crap and glued shut with more crap. Perhaps these wimps are in need of a less full-flavored smoke? This is where the billion tea bags you have lying around come in handy. Instead of spinach, cut open a couple Earl Greys and go to town. Smokers complained "there's too much of this tea shit coming into my mouth" but noted that "the spinach doesn't reek because of the tea." The tea cigarette "wasn't entirely unpleasant" but smokers "really didn't want to do this anymore."



The Caffeinated Combo: For millions of Americans, a cup of coffee and a cigarette was considered breakfast. Well now you can simplify this process even further by smoking your coffee. Coffee grounds, that is! Of all the blends, the coffee and spinach combo "tasted most like a joint, albeit a very old joint" and "was not completely awful by any means." While many said the "coffee flavor isn't coming through too well," others noted that the spinach "added an interesting topnote -- and that's always nice."

Gin

The exact types and amounts of botanicals used in gins are usually a closely guarded secret. However, by law, gin must contain juniper berries. Juniper berries & coriander seed typically constitute 90% of the total botanicals used. Typical botanicals used include :

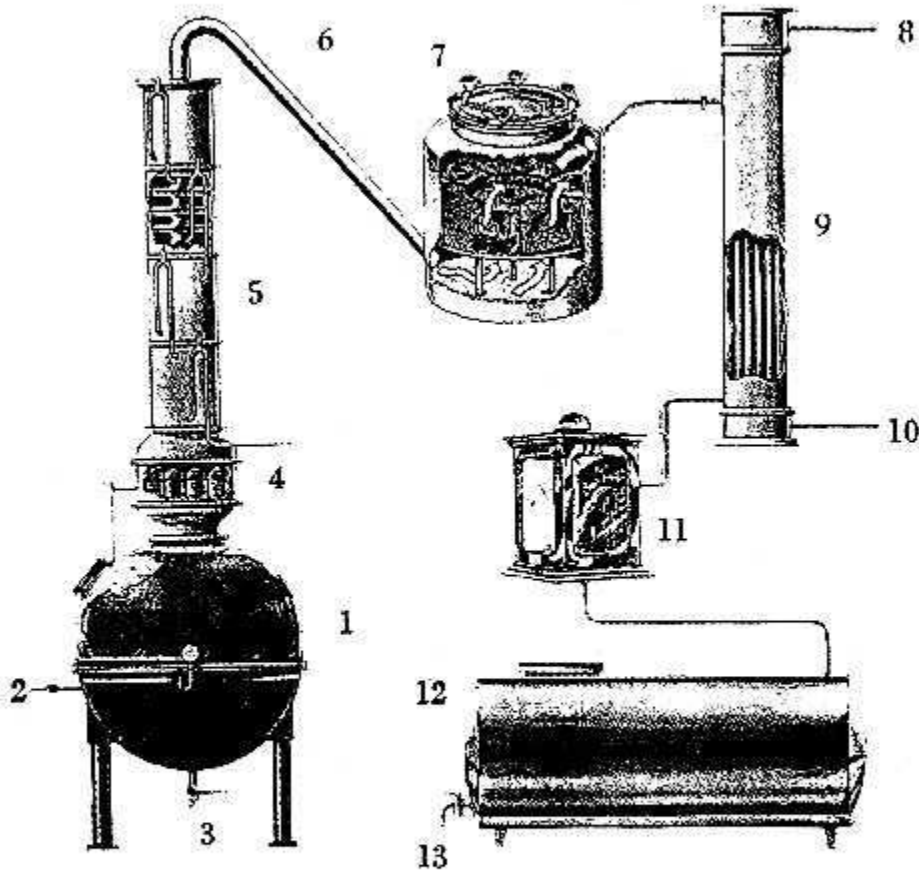
- juniper berries,
- coriander seed,
- angelica root,
- orris root,
- sweet orange peel, and
- licorice powder (root)

Commercially they are sometimes made by charging a pot still with a whisky base at 63%. The botanicals are packed in clean cotton bags, and immersed in the liquid. The still is rapidly brought up to temperature, then the heat input reduced. A small fraction is first collected at 83C, then the gin portion, which forms the central fraction, is collected from 83C up to 86-89C. The rest is then collected as tails. In determining the cut to tails, a smelling test of the distillate is the deciding arbiter, while the overhead vapour temperature serves only as a guide.

Wal writes ...

re .. the Carterhead Still used to produce Bombay Sapphire Gin. I thought the botanicals were in the actual still, which is a type of reflux column, but this is not so. The botanicals are held in a separate 'basket' which resembles a moonshine 'doubler' Diagram from 'Classic Spirits of the World', Gordon Brown, 1995.

THE UNIQUE BOMBAY SAPPHIRE DISTILLATION PROCESS



(Not to scale)

- | | | |
|----------------------|-----------------------------|------------------------|
| 1. Carterhead still | 6. Vapour pipe | 11. Spirit safe |
| 2. Steam inlet | 7. Copper botanicals basket | 12. Receiving tank |
| 3. Steam outlet | 8. Water outlet | 13. Bottling line feed |
| 4. Feints chamber | 9. Water condenser | |
| 5. Rectifying column | 10. Water inlet | |

John V has built a small basket that sits in the top of his distillation column to hold the berries and herbs

...

herewith my simple attempt at a 'gin head'. My desire has been to produce gin in the classic manner, i.e. by letting the alcohol vapour pass through/over a package of herbs & spices suspended in the

column. I was not interested in essences or such. Happily, it works.

Three aspects made it possible.

- 1) My reflux column is of the 2" diam. variety. Thus there is ample space for a packet of herbs & spices.
- 2) the column is packed with large s.s. scrubbers. By removing the top one, I can simply set my herb packet in its place.
- 3) The head of the column is not soldered onto the column, and is easily removed, exposing the top of the column.

The packet itself is made out of a square of plastic (?) window screen (8"x8"). I first tested its resistance to ethanol, by boiling it in ethanol. Whatever it is made of, it is indestructable. I simply rolled it into a tube about 1 1/2"diam, and folded over and stapled the bottom end. Also a couple of staples along the seam and at the top.

Spices and herbs are measured out, and poured into the packet. Drop the whole works into the top of the reflux column, and replace the column head. The pouch is located just below the T formed by the column and the short horizontal lyne arm. In the pictures below, the botanicals probably sit at the level of the white Teflon tape.

Gin botanicals for 20L turbo-sugar wash/ Reflux column

- o juniper berry - flat Tbsp
- o coriander - flat tsp
- o cloves - 1/2 dozen
- o anise - 1/2 tsp
- o fennel - flat tsp
- o cardamom - 1/2 tsp
- o lemon - 1" rind
- o lime - 1" rind
- o cassia / cinnamon stick - 3/4" fragment

Method: I put the whole amount into the small pouch, which seems to be enough for one distillation run of approx. 20L of Turbo-sugarwash. This seems a very small amount, but it gives me enough taste. Be cautious with adding anymore - the juniper berries can be VERY dominant. Also, keep the cassia/cinnamon to a min. It can really give a burning sensation. What I have here is about right for me. The lemon and lime rinds are actually v. thin peels, not including the white fibrous stuff on their underside. Anis and fennel are approximately the same in taste. I did not crush any of these - simply put them into the pouch whole. When wiith Turbo-sugar wash, I put the botanicals into the column with the first (and only) distillation. As the ethanol is coming off at 94-96%abv I see no reason to run it through separately to get the botanicals in.



You can either do it this method yourself, or it is easier just to make a simple gin essence, and add this to some 40% neutral alcohol.

I use a small essence still to make gin essence in. It is a 1L glass coffee pot, with a large cork in the top, through which a condenser sits. Total cost < NZ\$20. I gently crush up approx 50g of juniper berries, and a couple of coriander and fennel seeds, and soak these in alcohol of 75-95% strength, for a week or so. Sometimes add a wee strip of orange peel too. I put this into the potstill, and add a little water too. I distill off the essence, up to about 90C, or when the flavours stop. This essence is then added to neutral vodka at 40% - each litre only needing around 10 mL of essence to get the right flavour.



If your gin goes cloudy, it means that you have too much oil present for the % alcohol - either up the % alcohol until it dissolves again, use less oil, or just drink it cloudy.

Alan writes:

I have found that cloudiness problem caused by excessive oil content in gin essence can be solved by simply filtering the gin. The oil particles appear to be relatively large and get caught up by the filter, while the flavours are not affected.

Jack writes ...

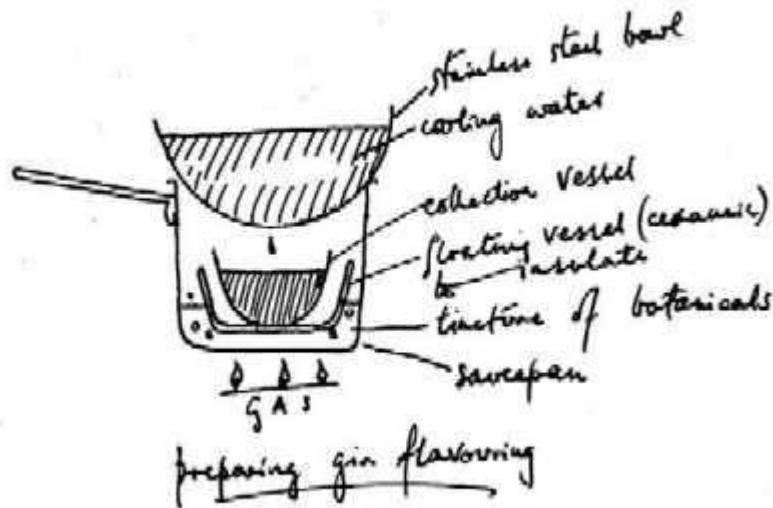
All the empirical data you need in regards to gin distilling has already been researched for you- by the gin distilleries themselves. Soaking the botanicals in the mash, and then running them through the still along with the mash (more likely an already distilled spirit) produces what is considered the heaviest gin flavors (I couldn't find a commercial distillery that does this). Some distilleries soak the botanicals for 24 to 48 hours in the base spirit, filter them out, then redistill (Gordon's and Plymouth soak for less than 24 hours, Beefeater for a full 24 hours) producing a slightly lighter style of gin. The lightest style of all is produced by a "gin head" still- the botanicals are suspended in a basket above the spirit in the still (This is how Bombay makes their gin). Each company argues that their method is best- Bombay says their method (gin-head still) results in a more delicate gin, Beefeater says that a long steeping time gives a gentler extraction, but builds complexity, and fixes the aroma in the spirit more solidly. Plymouth and Gordon's say a long steep can allow harsher flavors to come out, and allow certain flavors to dominate. The first bottle of gin extract that I made was too heavy in citrus for my taste- I gave it to a fan of Bombay Sapphire. My second gin concentrate consisted only of juniper - it turns out I like Schlichte brand Steinhaeger dry gin- very aromatic, but simple. You could always make a juniper extract, along with an extract of every other herb you can find, and add them 1/4 teaspoon at a time to a bottle of vodka, until you get what you want.

Mikrobios describes his technique ...

Intinct

- 60 g dried juniper berries,
- 1 g cardamom seeds,
- 1 g coriander seeds,
- 0.5 g dried cinnamon, and
- 0.5g dried rosemary

in 200mLs high proof distillate (95%) for 3 weeks in a sealed jar. The mixture becomes a murky brown. Don't worry if it smells unpleasant and medicinal. Then add 100 mLs filtered water, remove the cinnamon and either pot-still without reflux, or, as I do, use a simple 'internal alembic' made from kitchen utensils:



This method is very well known, and may be the best for essence distillations where one is starting with good spirit and where methanol/fusels are not a problem. I place two vessels in the pan: the collecting vessel is thus insulated against the heat of the boiling tincture and at the same time is kept below its own boiling point by the drops of distillate. When the cooling water is hand-warm (trial and error) I turn the gas off. About 100mLs of clear distillate is obtained; I bring this to 150 mL with cold filtered water. It immediately becomes opalescent. About 4 mLs of this will flavour a litre of 40% spirit to make a clear and flavourful gin. Calibrating a batch is a delightful way to spend an evening.

As a alternative method, UPS writes ...

You can order juniper berries at www.penzeys.com It's an American company out of Wisconsin. I have ordered from them. They have good products, prices and fast service.

I use juniper berries by simmering them in 50% vodka for ten minutes (with the lid on), then letting it cool overnight on it's own. The next day I filter this mess through a couple of coffee filters to get a homemade (and better quality) gin essence. I use about 35 grams of juniper berries (crushed) and 350ml of vodka - 5ml (one teaspoon) will turn a bottle of vodka into a light flavored gin. 10ml make a more traditional, strong flavored gin. You can add other spices like cardamom, coriander, and lemon peel (about one gram of each) for a more complex flavor in your gin. Using 10ml makes a straw yellow colored drink.

Regarding other sources of Juniper berries, Dick advises ..

I hope that was a mistake when you said you haven't got a yew bush for juniper berries. If what you are calling yew is the *taxus baccata* then the seeds in the berries (bright red with an obvious seed visible at the end - like a cocktail olive !!) are VERY VERY poisonous and should not be eaten under any circumstances (unless you're a bird, in which case the seeds go right through & out the other end !!)

The juniper you want is *juniperus communis*, the berries are green at first but if left on the bush for a year turn blue/black & have that wonderful juniper smell when crushed. Juniper is fairly slow growing so you're probably better off going to a health food shop, herbalist or good cook shop for supplies - the berries are great for use in cooking & pickling. However if you're ever in Scotland talk to me 'cos I know where they grow wild !!

Another source might be aromatherapy juniper oil, it'll be very concentrated but it's supposed to be a pure extract. Don't know if anyone else in the group has had experience of using juniper in this form.

For more on juniper (*Juniperus communis*), see <http://wiscinfo.doit.wisc.edu/moved/herbarium.htm>

From <http://www.ddgi.es/> ...

Juniper (Juniperus communis)

Plant that grows in the upper mountain areas of Catalonia, normally between 500 and 1,600 m. Although it can develop into a small tree of up to 7 m, it is usually found in bush form, less than 2 m in height. Its more characteristic features are its needle-like leaves, with a white band on the upper face, encircling the stem in groups of three. The fruit matures in the autumn after a two-year period on the plant. This fruit is pea-sized, round, purplish-blue in colour and surrounded by an aromatic pulp.



Matt writes ...

In Bob Emmons' _The Book of Gin & Vodkas_ he describes gin manufacture to some extent, even delineating the "cold compounding" method into three sub categories. Cold compounding is using neutral spirit and basically soaking the botanicals in it, which is what I see on the amateur sites we frequent. The other methods are of course distillation of botanicals into oils and then their addition to neutral spirit and traditional pot distilling of spirit through botanicals via the gin head.

He says the basic compounding includes crushing the botanicals used, a week of steeping in neutral spirit, and a week of resting. Followed by filtering, dilution, and bottling. It is clear that the filtering is for particulate matter since neutral spirit is used up front.

re: botanical amounts, he gives a complete listing of the common to the more obscure (rosemary, savory, etc.) botanicals used. Here's his section on a basic gin botanical ratio:

Here's a simple recipe utilized for making a basic gin. To 2,000 liters of 100 proof alcohol, add 45.4 kg of juniper berries, 22.7 kg of coriander seeds, 4.5 kg of cinnamon bark, 4.5 kg of angelica root, 0.45 kg of lemon peel, and 0.45 kg of cardamom. The end result will be immediately recognizable as gin.

Well that's good news ;-) He doesn't mention the method used for the above "recipe" but it would appear to be a cold compounding method.

notes on botanicals: North American cinnamon of commerce is actually the bark of the cassia tree. True cinnamon is not as easily obtained but it would seem his basic gin is using the cassia bark. Cardamom in this case would be cardamom seeds themselves and not the whole pods. Remember to remove as much pith (the white part) from the lemon peel; it is bitter.

Wal writes ...

For the history of gin (1650) see: <http://cocktails.about.com/library/weekly/aa080899.htm>

The Household Cyclopedia (1881) gives a Dutch and an English recipe: "To Prepare Gin as in Holland" using a proof spirit distilled from a rye, barley malt mash. Scaled down and converted to metric it consists of macerating 17.5g of juniper berries and 0.75ml (15drops) of juniper oil in 1 litre of proof spirit and redistilling. "English Genever" is made by macerating 35g of juniper berries in 1 litre of proof spirit with added water and redistilling.

Some distillers have the alcohol vapor pass through the botanicals (in a gin head), others macerate together and redistill while others distill various botanicals separately, and then blend, because different oils have different boiling points. I suspect some modern gins add essential oils to a neutral spirit instead of redistilling with botanicals.

Dutch gin (genever) is based on a heavier spirit made from a mash of wheat, rye and malted barley distilled in pot stills. It is often stated wrongly that genever uses only juniper. Other botanicals are used. It's the method used which gives genever its distinctive style. Bols, passes the vapor in a 4th distillation over the juniper berries. Triple distillation is common, and juniper is normally introduced in the second distillation, with the other botanicals being added to the 3rd (or sometimes 4th) distillation. Notaris redistills with juniper, while a 3rd blending component is distilled with other botanicals separately. The end result of combining a richer spirit and a higher percentage of juniper is a spirit which is more powerfully textured than London gin.

Old genevers were straw-colored and pungently sweet. Early English gin was also a juniper-laden drink flavored with glycerine and sugar syrup (Old Tom). Plymouth gin claims to be the first distillery to produce a dry, crystal-clear gin in the late 18th century. Gin was a perfect medium for bitters (to prevent stomach problems), lime juice (to prevent scurvy), and Schweppes Tonic Water containing quinine (to prevent malaria).

There are 2 main ways to make gin: redistilling a neutral spirit which has had botanicals added to it

(Distilled Gin); or adding essential oils (cold compounding). Distilled Gin (on label) is superior.

The pot stills used have high necks for more reflux than the usual whisky stills.

All distilleries have their secret recipe of botanicals and how they put them in varies. Some put the botanicals in for only a short time before redistilling, others steep them for 24 hours before distilling, others pass vapor through a basket holding the botanicals. Not all botanical aromas appear at the same time. After a quick foreshots run, the volatile citrus notes appear, then come juniper and coriander, then the roots such as orris, angelica and liquorice. The length of the run is important. The alcohol concentration of the final product is also important as citric notes are the most volatile, and should be greater than 40%abv. Some duty-free gins are 50%abv.

All brands use juniper and coriander, but Gordons uses ginger, cassia oil and nutmeg. Beefeater uses bitter orange peel as well as angelica root and seed. Plymouth's 7 botanicals include sweet orange peel and cardamon. Sapphire uses the now rarely seen cubeb berries (India) and grains of paradise (Ghana).

For convenience I have scaled down and rounded the quantities for the recipes for Dutch Geneva, Cordial gin and dry London Gins from 'Muspratt Chemistry'. I have assumed that the botanicals will be macerated in 1 litre of 50%abv and then redistilled. 42%abv is the original strength of Plymouth Gin. I have also doubled the quantity for bitter almonds as the original used pressed bitter almond cake and almonds contain about 50% oil. For the cordial gins, double the quantity of botanicals and then dilute to 22% abv. I have omitted the 'West Country Gin' as it contains only 2g of juniper/litre and a total of about 35g/litre of botanicals seems to be an optimal quantity.

Recipe 1 (from 'The Book of Gin & Vodkas', Bob Emmons)

BASIC GIN

*juniper 22.5g
coriander 11.5g
cassia 2.5g
angelica root 2.5g
lemon peel 0.25g
cardamon 0.25g*

Recipe 2

BRITISH GIN

*juniper 15g
coriander 15g
bitter almonds 12g
angelica root 0.25g
liquorice root 1g*

Recipe 3

CORDIAL GIN

*juniper 10g
coriander 7.5g
bitter almonds 1.5g
orris root 0.25g*

angelica root 0.25g
cardamon 0.06g
liquorice root 1g

Recipe 4

CORDIAL GIN

juniper 10g
coriander 7.5g
orris root 0.25g
angelica root 0.125g
calamus root 0.25g
cardamon 0.05g

Recipe 5

FINE GIN

juniper 10g
coriander 0.5g
grains of paradise 0.5g
angelica root 0.5g
orris root 0.25g
calamus root 0.25g
orange peel 0.25g
liquorice root 10g (optional)

Recipe 6

LONDON GIN

juniper 10g
coriander 10g
bitter almonds 1g
angelica root 0.25g
liquorice root 1g

Recipe 7

BASIC GENEVA

juniper 10g
coriander 12g
cassia 0.6g
angelica root 0.5g
calamus root 0.6g
bitter almonds 1.2g
cardamon 0.05g

Recipe 8

PLAIN GENEVA

juniper 10g
coriander 10g
calamus root 0.25g
bitter almonds 0.5g
orris root 0.25g

Recipe 9

FINE GENEVA (highly recommended)

- juniper 20g
- coriander 8g
- angelica root 1g
- calamus root 0.25g
- bitter almonds 3g
- cardamon 0.125g
- grains of paradise 1g

Recipe 10 (from 'The Household Encyclopedia')

ENGLISH GENEVA

- juniper 35g

With the aim of formulating a standard model for gin botanical quantities for the homedistiller, here is a table of the botanicals used in 8 modern gins:

- 1) Tiger Gin
- 2) Gordon's Distilled London Dry Gin
- 3) Beefeater London Distilled Dry Gin
- 4) Plymouth Gin
- 5) Bombay Distilled London Dry Gin
- 6) Bombay Sapphire Distilled London Dry Gin
- 7) Mercury Gin
- 8) Juniper Green London Dry Gin

Botanicals used-----Gin Brand (see above)

	1	2	3	4	5	6	7	8
Juniper	yes	yes	yes	yes	yes	yes	yes	yes
Coriander	yes	yes	yes	yes	yes	yes	yes	yes
Angelica root	yes		yes	yes	yes	yes	yes	yes
Cassia	yes	yes	yes		yes	yes	yes	
Cinnamon	yes							
Liquorice	yes		yes		yes	yes	yes	
Bitter almonds					yes	yes	yes	
Grains of Paradise					yes			
Cubeb berries					yes			
Bitter orange peel			yes					
Sweet orange peel	yes			yes			yes	
Lemon peel	yes		yes	yes	yes	yes	yes	
Ginger		yes						
Orris root	yes			yes	yes	yes	yes	
Cardamon		yes		yes				
Nutmeg		yes	yes					
Savory							yes	
Calamus (sweet flag)								
Chamomile (?)								

The total amount of botanicals used is about 20-35 grams/litre. If we take the dominant botanical juniper as 'x', the proportions of the botanicals used is:

- o x = juniper

- $x/2$ = coriander
- $x/10$ = angelica, cassia, cinnamon, liquorice, bitter almonds, grains of paradise, cubeb berries
- $x/100$ = bitter & sweet orange peel, lemon peel, ginger, orris root, cardamon, nutmeg, savory, calamus, chamomile.

If we use $x = 20g$ then $x/2 = 10g$, $x/10 = 2g$, $x/100 = 0.2g$ (200mg)

Some current gins do not have a pronounced juniper character as they are used for cocktails and are more of a flavored vodka - for this type of gin for 'x' use equal quantities for juniper & coriander (i.e. $x = 20g$ composed of 10g of juniper & 10g of coriander)

The botanical are macerated in 45%abv neutral alcohol (usually for 24 hours), redistilled and then diluted to 42%abv which is an optimal strength for holding the flavour of the botanicals. Only the middle run (80-85%abv) is used to produce a high quality gin. Plymouth Gin also comes in a 57%abv 'Navy Strength' and which is also the British 100 proof strength.

All gins include juniper as an ingredient along with other botanicals. Typically a fine gin contains 6-10 botanicals, although the Dutch Damask Gin has 17 and the French Citadelle Gin has 19 but this could be more for marketing reasons and has been criticised for lacking direction.

Botanical names:

juniper - *juniperus communis*
 coriander - *coriandrum sativum*
 angelica - *archangelica officinalis*
 cassia - *cinnamomum cassia*
 cinnamon - *cinnamomum zeylanicum*
 liquorice - *glycyrrhiza* sp.
 bitter almond - *prunus dulcis, amara*
 grains of paradise - *afromumum melegueta*
 cubeb berries - *piper cubeba*
 bitter orange - *citrus aurantium*
 sweet orange - *citrus sinensis*
 lemon - *citrus limon*
 ginger - *zingiber officinale*
 orris root - *iris florentina*
 cardamon - *elletaria cardamomum*
 nutmeg - *myristica fragrans*
 savory - *satureja hortensis*
 calamus - *acorus calamus*
 chamomile - *matricaria chamomilla*

The usual mash for English gin is 75% maize, 15% barley malt and 10% other grains, although rectified spirit from molasses is also used. Dutch gin originally was made from 1/3 malted barley and 2/3 rye meal, although these days the proportions given is 1/3 malted barley, 1/3 rye, 1/3 maize.

The Dutch figure prominently in the history of distilling. With their business acumen, they were quick to make a guilder when the opportunity arose. The first recorded distillation of gin (eau de vie de genievre) is in 1572 by Franciscus Sylvius a physick of Leiden, and it was meant as a health tonic based on juniper berries. Lucas Bols, the father of commercial gin production, built his first distillery in 1575 near Amsterdam. The first recorded commercial liqueur was Lucas Bol's Kummel. It was meant as an

aid for digestion i.e. as a digestive. It's based on caraway seeds which are believed to aid digestion and prevent flatulence.

The use of caraway flavored spirits are still common from Holland to Latvia. Caraway has a yield of essential oils from about 3-7%, therefore you would need to macerate about 100 grams of crushed seeds in 40%abv and then to redistill to get a caraway flavored spirit. This would have about a teaspoon (5ml or 100 drops) of caraway essential oil. Using a commercial essential oil is another alternative. Here is a basic recipe for those with a flatulence problem:

Kummel

- 750ml (3 metric cups) of caraway flavored alcohol 40%vol (5ml essential oil/litre i.e. redistill 100g crushed seeds in 1L 40%abv)
- 1 cup sugar
- 1/2 cup water

Make a simple syrup and add to the alcohol

You could also make a caraway flavored vodka by maceration:

- 1 litre vodka 40%abv
- 60g (2oz) lightly crushed caraway seeds (4tbsp)
- 60g (2oz) sugar (1/2 cup), or to taste.

Macerate for 10 days and strain.

Pacharan (Patxaran) is a Spanish Basque specialty made by macerating sloe berries (blackthorn, prunus spinosa) in a dry anise flavored alcohol with other herbs and spices. Sloe Gin is made by macerating sloe berries in gin. Here are two recipes from "Wine Making & Home Brewing" S. Beedell (1970):

Sloe Gin 1

- 1 gallon (4.5L) gin
- 3 and 1/2 (1.6 kg) lb white sugar
- 3 oz (85 g) bitter almonds
- 3 quarts (3L) sloes
- Put all the ingredients into a 2 gallon (9L) jar and shake 2-3 times a week. Strain and bottle at the end of 2 months.

Sloe Gin 2

- Put 3 pints (1.7L) of sloes in a gallon jar (4.5L) with
- 1 oz (30g) of sweet almonds and
- 1 and 1/2 lb (700g) of white sugar.
- Pour in 2 quarts (2l) of gin and cover.
- Shake the jar every third day for 3 months. Strain, bottle and seal. The gin improves with keeping.

I have a Ukrainian recipe ..for a 'Ternivka' or Sloe Vodka. It relies on wild yeasts to weakly ferment

the sloes.

Ternivka (Sloe Vodka)

Fill a large jar with ripe sloe (blackthorn) berries that have been pricked in several places. Sprinkle with sugar. Cover neck and let it stand in the sun for 6 weeks. When fermentation has ceased add to every 10 kg (20 lb) of berries 500 ml (1 pt) of vodka. Let it stand for several months. Strain. Add more vodka (quantity not given, but going by sloe gin recipe it could be up to 10 litres or 20 pts).

The English make a Plum Gin from Damson plums, which are related to the French Mirabelle plum, from which the well-known eau-de-vie de Mirabelle is made. Here are two recipes for Damson Gin from "Winemaking and Home Brewing", S. Beedell (1970).

Damson Gin (Fortified) 1

- *1 lb (500 g) damsons*
- *1 and 1/2 pts (850 ml) gin*
- *3/4 lb (350 g) sugar*

Mix all together, and shake well two or three times a day till the sugar is dissolved. Store for at least a year before using.

Damson Gin (Fortified) 2

- *Damsons*
- *Cloves*
- *Essence of almonds*
- *Unsweetened gin*
- *Sugar candy*

Wipe the damsons, removing stalks, and prick each one in several places with a pin. Prepare some dry quart (litre) bottles, and half fill them with the fruit. To each bottle add 1 clove, 2 oz (60 g) of crushed sugar candy and a few drops of essence of almonds. Then fill up with unsweetened gin. Cork securely, and keep in a warmish place for 3 months, shaking occasionally. Strain the gin until it is clear then rebottle and cork well, and store until wanted.

Pacharan is a Spanish liqueur.

- *1 litre dry aniseed flavored alcohol (e.g. arak,raki,ouzo or you could add 4tsp aniseed to 1litre of vodka)*
- *250 g sloe berries (blackthorn, prunus spinosa)*
- *2 tbsp sugar*
- *stick of cinnamon*
- *6 coffee beans*
- *camomile flowers (say 1 tsp)*
- *dry orange peel*

Macerate the sloe berries in the alcohol until it becomes a characteristic intense red, then add sugar, coffee beans,camomile flowers,cinnamon, orange peel. Macerate for at least 30 days. Strain. Variations of the above exist. The use of sloe berries is reminiscent of English sloe gin.

Baker quotes from "The Alcohol Textbook" by Jacques, Lyons & Kelsall :

Production of gin

The BATF definition of gin is a product obtained by original distillation from mash, or by redistillation of distilled spirits, or by mixing neutral spirits with or over juniper berries and other aromatics, or with or over other extracts derived from infusions, percolations, or maceration of such materials, and includes mixtures of gin and neutral spirits. It shall derive its main characteristic flavor from juniper berries and be bottled at not less than 80 proof (40 %). Gin produced exclusively by original distillation or redistillation may be further designated as distilled. The regulation also states that dry gin (London dry gin), Geneva gin (Holland's gin) and Old Tom gin (Tom gin) are types of gin known under such designations.

This regulation means that gin may be produced by

- 1) distilling spirit with juniper berries and other botanicals, or*
- 2) mixing spirit with a distilled gin concentrate, or*
- 3) mixing spirit with a blend of essences of juniper and other flavorings.*

The spirit used in gin production is usually neutral, but in the production of Geneva gin, which is popular in the Netherlands and Quebec, it is a heavily flavored distillate referred to as malt wine.

Distilled gin is normally produced in batch operations using pot stills. The pot still is usually filled with neutral spirit diluted to 45-60 %, and then the juniper berries and other botanicals are added. The berries and botanicals may be added directly to the spirit either in loose form or contained in a cotton sack. Alternatively, the mixed botanicals may be suspended above the liquid surface either in a cotton sack or in a wire mesh rack. In the gin distilling process the pot still is heated by steam indirectly through a calandria in the bottom of the pot.

The distillate coming over in the first few minutes of flow is normally discarded as heads for reprocessing. The main bulk of the distillate is then taken as product, and the final portion distilling below a predetermined proof (of about 45 oGL) is discarded as tails for reprocessing. The pot still product is then sent to the bottling department for dilution and bottling. There is usually no storage or blending of different gin batches.

In the preparation of gin concentrate the distillation process is much the same as for distilled gin, but a much greater quantity of botanicals is added in the pot still. The gin concentrate is then simply blended with neutral spirit prior to bottling. Gin essences are prepared by blending essential oils and other extracts derived from juniper berries and botanicals. With the introduction of highly concentrated gin essences, it is possible to use as little as 0.01% by volume of the essence in a blend with neutral spirit.

Some internationally known brands of gin are produced by all three methods (i.e. distilling, concentrate blending, and essence blending) in different countries without appreciable variance in taste and odor when normal quality control procedures are used.

The quality and type of juniper berries and the mix of other botanicals largely determines the nature of the end product. For example, the flavor of London dry gin is strongly influenced by large amounts of coriander seeds in the botanical mix. Simpson (1966; 1977) and Clutton (1979) have listed several

botanicals commonly used in gin production (Table 2). Another frequently used botanical is the chamomile flower (*Chamaemelum nobile*).

Table 2. Botanicals used in production of gin.¹

Common name	Botanical name
Juniper berries	<i>Juniperis communis</i>
Coriander seed	<i>Coriandrum sativum</i>
Liquorice root	<i>Glycyrrhiza spp.</i>
Fennel seed	<i>Foeniculum vulgare</i>
Cubeb berries	<i>Piper cubeb</i>
Cinnamon bark	<i>Cinnamomum zeylanicum</i>
Nutmeg	<i>Myristica fragrans</i>
Aniseed	<i>Pimpinella anisum</i>
Grains of paradise	<i>Aframomum melegueta</i>
Cassia bark	<i>Cinnamomum cassia</i>
Sweet orange peel	<i>Citrus sinensis</i>
Bitter orange peel	<i>Citrus aurantium</i>
Cardamom seeds	<i>Elettaria cardamomum</i>
Angelica root	<i>Archangelica officinalis</i>
Lemon peel	<i>Citrus limon</i>
Orris root	<i>Iris pallida</i>
Callamus root	<i>Acorus calamus</i>
Caraway seed	<i>Corum carvi</i>

Adapted from Simpson (1966, 1977) and Clutton(1979).

As with vodka, great care should be taken in handling and bottling gin. Unlike vodka, however, the problem is not picking up flavors from other products. The risk is contamination of other products with gin. If it is not possible to use a dedicated set of tanks and bottling equipment, everything coming in contact with gin should be thoroughly washed before use on any other beverage.

Absinthe

There are three basic styles for making absinthe.

1. Add wormwood to a wine and distill off. Soak some wormwood in neutral spirit to colour, and add the two together.
 2. Soak wormwood in some neutral alcohol
 3. Adding oil extract to neutral alcohol.
- Of these, (1) is the traditional technique, but (2) is commonly used by "cheaper" manufacturers. Style (3) is usually shunned.

Wal writes ...

Pernod is Absinthe without the wormwood for legal reasons. If you want to know what it tasted once, macerate wormwood (artemisia absinthium) in the bottle.

An article on Absinthe (Scientific American, June 1989, pp112-117) describes a 1855 recipe from Pontarlier, France. Here is a scaled down version you can try:

- Macerate 25g wormwood (*Artemisia absinthium*), 50g anise, and 50g fennel (all finely divided) in 950ml 85%abv in a 2l flask. (Note: no heat was specified for extraction).
- Add 450ml distilled water.
- Do a pot still distillation, collecting 950ml of distillate.

- Separate 400ml of the distillate, add 10g Roman wormwood (*Artemisia pontica*), 10g hyssop, 5g lemon balm, and macerate at 60C.
- Filter and reunite with the remaining 550ml and dilute to 74%abv to produce 1litre of Absinthe.

Note: I think you use crushed aniseed and fennel seed, as it is the seed that has the strongest flavor. You can see that it is the anise flavor that predominates.

Modern "Pernod" and "Ricard" are basically absinthes without the wormwood. They are now known as a "pastis" (regional for "melange" or mixture). As a substitute for wormwood, the modern drink uses increased amounts of aniseed. Pernod includes aniseed, fennel, hyssop, lemon balm along with lesser amounts of angelica root, star-anise, dittany, juniper, nutmeg, veronica. Different absinthe manufacturers used slightly different ingredients, sometimes using nutmeg and calamus, both of which have purported psychoactive effects.

In Culpeper's 'The Complete Herbal', 1653, there is a recipe that looks like the ancestor of Absinthe and which is still relevant, unlike some of the others which include vipers, swallows, roosters and snails! I have redacted it to a 20l (5US gal) quantity. See - 'Compounds, Spirit and Compound Distilled Waters' <http://www.bootlegbooks.com/NonFiction/Culpeper/Herbal/chap375.html>

'Spiritus et Aqua Absynthii magis composita Or spirit and water of Wormwood, the greater composition'

Absinthe (1653)

20 L wash 14-18%abv
 750g Wormwood (*Artemisia absinthium*)
 750g Roman wormwood (*Artemisia pontica*)
 4 tbsp Sage
 4 tbsp Mint
 4 tbsp Lemon balm
 20g Galangal
 20g Ginger
 20g Sweet Flag (*Acorus calamus*)
 20g Elecampane
 50g Liquorice root
 150g Raisins
 20g Aniseed
 20g Fennel seeds
 15g Cinnamon
 15g Nutmeg
 5g Cardamon
 5g Cubeb pepper (*Piper cubeba*)

Macerate chopped ingredients for at least 12 hours and then distill. Add 1 cup of sugar/litre of distillate. Absinthe was originally about 60%abv, while the above 1653 recipe was intended to be a single pot distillation.

ARTEMISIA ABSINTHIUM (Wormwood)

Synonyms : Wormwood; Common Wormwood

Definition : *Artemisia Absinthium* consists of the dried leaves and flowering tops of *Artemisia absinthium*

L. (Fam. Compositae), a shrubby al herb growing in the United States and Canada. It is cultivated in N. Africa, Europe and the U.S.A. The flowering tops are collected during the late summer Artemisia Absinthium yields about 1% of volatile oil containing thujone (absinthol), thujyl alcohol and iso-valeric acid . It contains, in addition absinthin and a bitter glycoside.



Jack recommends the following as very good ...

In one litre of undiluted clear spirit (95%) soak for twenty days (shaking once a day) the following:

- 28 grams wormwood (*artemisia absinthium*)
- 28 grams aniseed
- 28 grams fennel
- 28 grams star anise
- 3.5grams coriander

After twenty days of soaking, add water until 40% is reached, then put the liquid with the herbs in your still and distill out to the 60 to 70% alcohol range - this must be done right out of the still - the anise oils are dissolved in the alcohol, if you add water to dilute the distillate, it will turn cloudy as the oil droplets are thrown out of solution. If your still is picky about the % of alcohol it will produce, just dilute down to a level that will distill out to 60-70%. Sometimes tails will show up before this % is reached - you just made a stronger batch - unless you want to re-distill it (with the herbs) you'll have to live with that %.

If you wish to have a traditionally colored drink, add to the litre or so of liquor the following:

- 4.5 grams mint
- 4.5 grams wormwood
- 4.5 grams licorice root (cut)
- 1.25 grams citrus peel

*Just soak the above until the color you want is reached, then filter and bottle. If *artemisia absinthium* cannot be found, *artemisia pontica* (roman wormwood), *tanacetum vulgare* (tansy), *salvia officinalis* (sage), *thuja occidentalis* (white cedar), or *artemisia vulgaris* (mugwort) may also be used in it's place. This is a traditional absinthe recipe from the turn of the century. As for those worried about the medical effects- recent research has found that the old disease "absinthism" has symptoms and progression remarkably similar to plain old alcoholism, and the amount of thujone (active ingredient in wormwood) in a glass of absinthe is less than one-tenth the amount needed to cause convulsions in rats (when injected). For those interested in making absinthe but unable to find the above plants, thujone is found in most of the Compositae (daisy) family- a little research should find alternates to the above plants. enjoy!*

Larry cautions ...

Jacks Absinthe recipe will not only taste lousy, but is potentially dangerous, because the maceration time he recommends is 19 days too long. All vintage absinthe recipes indicate to macerate the herbs in 85% alcohol for Less than 24 hours, and then distill. If you macerate longer than this, you infuse the alcohol with too many of the harmful properties of the wormwood, and not only will your drink taste nauseatingly bitter, but it can also make you ill.

Also note that modern Pernod is not Absinthe without the wormwood. Pastis is a descendant from Absinthe (Pernod & Ricards way of dealing with the Absinthe ban of 1915), but is an entirely different drink with a different recipe made by different processes. Modern Pernod has more in common with Ouzo than Absinthe.

As a side note you can find some wonderful and safe Absinthe recipes at:

<http://www.feeverte.net/bedel/>.

Xneon writes :

I combed the web for a few days compiling all that i had found with a few modifications we have produced a GREAT recipie!!!

Take

- 750ml 90+% alc.
- 2oz wormwood
soak for aprox. 7-10 days
strain (dont worry about leaving a small amounts in)
- 2 tbl ea anise & fennel
- 3-4t bl spearmint (light flavor but goes well)
- 1 tsp coriander
- 1/2 tsp caraway
- 1/4 tsp cardamon
- 1 tbl angelica root
- 1 tbl ea anise hyssop & hyssop

Soak another 7-10 days

add 750ml water and potstill for BEST results (i will not try it any other way

*I used a 1 gallon stove top potstill
took a heads of 1/2 oz and then collected about 1000-1200ml
blended to 65% and added 1 drop of green food coloring for effect (i just havent steeped any
wormwood for color yet)*

Volodia writes ...

Make you own absinthe, although the use of wormwood in spirits is banned because of its thujone content, although some sources say the quantity is slight and the danger is exaggerated. Similarly Zubrowka or bison grass flavored vodka is modified for the U.S. market because of it contains coumarin which is a blood thinner. I would have thought that because of the high cholesterol diet of the average American this would be useful! Bison grass or sweet grass (hierochloe odorata) is readily available in the U.S. and makes a great flavored vodka - watch that you don't bleed to death though!

See: <http://absinth.com/links/history.html>

Steven warns against using wormwood oil ...

According to <http://www.gumbopages.com/food/beverages/absinthe.html> wormwood oil has nothing to do with absinthe, and is **POISONOUS** ! There is much more on that site, aswell as a story of some guy trying to get high by drinking a bottle of wormwood esential oil :).

Instead, try SAFER means, such as perhaps even growing your own wormwood 'Artemisia absinthium' by buying seeds from <http://www.thymegarden.com/> seeds/plants from <http://www.peruvian-journey.com/wormwood.htm>, or probably from many other places (just search for buying wormwood artemisia absinthium at google i guess)

Using an Essence or Flavour still

One great tool to have is a small stove-top pot still that you can use to make your own essences in. Mine is simply a 1L glass coffee pot, with a large cork in the top, through which a condensor sits. Total cost < \$20.



With this, you can either do

- "alcohol extractions", where you macerate your flavours in alcohol for a while, then distill them off;
- "water extractions", where you use water instead, or
- "steam extractions", where you hang the herbs etc in a wee wire basket above the boiling water, for steam to pass through before you collect & condense it.

One great success I've had is making my own "smokey peat" flavour for trying to imitate those strong Islay Scotch whiskies like Laguvulin. To make my "essence of compost", all I did was get a handful of peat (sold at gardening shops as compost - yeah - they look at you strange when you only ask for a handful, not a trailer load, then explain why), put it in a can with a lid, then heat up the can over a flame for 15 minutes. Don't have the lid tight (or else the whole thing can blow up), but just sitting lightly in place. It may smoke a little, so have the fume extraction on, or do it outside. Leave the lid on while it cools, so that the smoke will cool & collect on the peat. Once cool, soak it in some 75%+ alcohol. Distil it off sometime later, to make a fantastic smokey peat essence.

For more about peat, see <http://www.ucmp.berkeley.edu/plants/bryophyta/sphagnointro.html>

Motie elaborates ...

The stuff you want is Peat potting soil. Don't try it in a small container. It will explode. Think of it as a very crude distillation. Your still won't run without a venting of pressure. It's more like the creosote from a very smokey wood fire. If you are familiar with gasification, you will understand the explosion part. When heated in the absence of air, it will give off Carbon Monoxide and Hydrogen Gas, along with the smokey stuff and water vapor. These are very poisonous gases to breath, and explosive besides. I'm not experienced at what you are attempting to do, but I do smoke fish and make jerky in a smokehouse.

If I were to attempt to make a liquid smoke flavoring, I would definitely do it outside. I would build a small enclosed fire in a bucket or something similar, using charcoal or wood. Burn it to a bed of coals. The very damp Peat potting soil would go on top of the coals. A container of some type would go on top of the Peat, and a roundbottom pot full of very cold water suspended just above that. The wet Peat smoke and steam would pass by the container, up to the cold round bottom of the pot above, and condense on it. Hopefully, the drops would follow the bottom of the condenser pot, and drop into the container below. I can't guarantee the method, but that is how I would make my first attempt. This gets away from the pressure issues of a closed, heated container, and away from the production of Carbon Monoxide Gas. Any Hydrogen Gas produced can burn in the fire and be eliminated.

SAMOHON

Home distillation (samohon) is currently legal in Ukraine, and mash bills that were previously transmitted orally are now published. The recipes below were originally published in 1992, but some of the recipes using bizarre ingredients such as halva, starch, confectionery, tomato paste have been omitted as they were created during sugar shortages in Soviet times.

The recipes have been redacted and scaled to 20 litres (5 US gallons) which is a common home fermenter size and useful for comparison purposes. The original recipes actually use a convenient 'vidro' (bucket) of 10-12 litres as a measure. A wine or beer yeast will give a better result than yeast for bread making which is the common type used.

The wash is distilled in traditional pot stills, the designs of which show ingenuity, or for small amounts, by

using a modified Chinese/Mongolian still, as described at <http://www.livemind.co.uk/Recipes.htm>
'Samohon' is the Ukrainian term, 'samogon' is the Russian.

1) **Grain** (malted)

Rye, wheat, barley, millet, maize, peas are first malted by soaking and spreading out in a 25 mm layer to sprout. Wait until sprouts are 5 mm long. Dry the grain (do not exceed 50C). Remove the sprouts. Alternatively 'green' or undried malted grain can be used immediately. It is then crushed, and added to water at the mash temperature of 65C (149F). During the 90 minute conversion rest, the starches are converted to sugars. Leave overnight to cool to the fermentation temperature of 24C. Add yeast. For malting see "Malting in a Nutshell" <http://www.hbd.org/brewery/library/Malt.html> 1 water

5 kg crushed malted grain

Yeast

2) **Potatoes**

Boil the potatoes in a minimum amount of water (just to cover) and then mash. This should make about 20 l (5 US gals) of mash. Cool to 65C. Add the malted grain to the mashed potatoes and leave overnight to cool to 24C. Add yeast.

- 20 kg potatoes
- 1 kg crushed malted grain (to convert the potato starch to sugars)
- Yeast

3) **Grain (malted) and Bread**

Soak rye or wheat bread in water at 75C. When it drops to 65C, add crushed malted grain and leave overnight to cool to 24C. Add yeast.

- 20 l water
- 5 l (1/2 bucket) crushed malted grain
- 15 loaves of bread

4) **Sugar**

- 20 l water
- 5 kg sugar
- Yeast

Yeast requires nutrients missing in pure sugar, and it is recommended to add 25% sediment from a previous fermented mash (back slopping).

5) **Sugarbeets** Grate sugarbeets and cook with a minimum of water. Place in sack and wring out juice.

- 20 l sugarbeet juice (15% sugar)
- Yeast

6) **Sugarbeet Molasses**

- 20 l water
- 10 l (one bucket) molasses (50% sugar)
- Yeast

7) **Apple Juice**

Place quartered apples in a large bin and mash to a pulp using a 2 m pole. Place in a sack and wring out juice.

- 20 l apple juice (approx. 10% sugar)
- 2 kg sugar
- Yeast

8) **Wild Pears**

3 buckets of wild pears (30 l). Allow to go soft. Mash to a pulp using a 2 m pole. Add yeast and ferment on pulp.

9) **Plums**

3 buckets of plums (30 l). Mash to a pulp. Add yeast and ferment on pulp.

10) **Domestic Pears**

- 2 and 1/2 buckets of pears (25 l)
- 2 l water
- 1-2 kg sugar
- Yeast

Cook pears in water, add sugar and allow to cool. Add yeast.

11) **Dried Fruit**

- 4 kg dried apples or pears
- 20 l water
- 5 kg sugar
- Yeast

Cook dried fruit in water until soft. Cool and add yeast.

12) **Grape Pomace**

- 20 l water
- 10 kg grape pomace from wine making
- 5 kg sugar
- Yeast

13) **Honey and Sugar**

- 20 l water
- 4 kg honey
- 2 kg sugar
- Yeast

14) **Grain and Sugar**

- 20 l water
- 4 kg crushed grain (cooked)
- 500 g crushed malted barley
- 2.5 kg sugar
- Yeast

Add grain grits and 100 g of barley malt to 10 l of water. Cook until grain gelatinises. Cool to 65C and add rest of barley malt for a 90 minute conversion rest. Cool to 24C and add yeast. If using flaked grain or bulgur wheat which are precooked, just add to water at 75C, wait until it drops to 65C and then add barley malt.

While searching, I came across interesting historical recipes from Ukraine, which I think are worth posting to give a more global perspective.

UKRAINIAN ALCOHOLIC BEVERAGES

Distilled alcohol ('horilka') appeared in Ukraine in the 15th century. Prior to this alcoholic beverages were produced by natural fermentation. Popular beverages were 'syrivec' (bread kvas), fruit or berry kvas, birch or maple sap kvas, beet kvas, 'pyvo', (hopped beer) 'braha' (unhopped beer) and 'syta' (unfermented mead must) and the fermented 'med' (mead). 'Kvas' and 'med' were common beverages in Kievan Rus', 'kvas' being an everyday drink, while 'med' was for special occasions such as religious feast days ('kanunyj med') and weddings.

A Rus' chronicle mentions that mead was brewed for the funeral wake which Princess Ol'ha held for her husband. With the introduction of distillation flavored horilkas appeared. In the 19th century a 'nalyvka' was made by steeping fruit in 25% horilka, while a 'nastojanka' ('nastojka') was made by steeping herbs and spices in a similar strength horilka. Later, when it became generally affordable, sugar was added for sweetness. The term 'nalyvka' was also later used for a type of sweet fruit wine made by fermenting fruit and berries without added water, but with sufficient added sugar to provide a residual sweetness. This was naturally weakly alcoholic, and to increase the strength, horilka was added. A stronger variant, was called 'spotykach', the name derived from the Ukrainian verb 'to tumble'. The term 'mohorych' was used for an alcoholic beverage that was drunk to seal or ratify an agreement, similar to the French term 'ratafia'.

Below are redacted alcoholic beverages from various Ukrainian cook books, with emphasis on the earlier variant. With the legalizing of home-distillation in Ukraine, a 2001 Ukrainian cook book has even recipes for 'samohon'. The quantity for the recipes has been scaled to a convenient one U.S. gallon or 4 litres.

'Syta'(Unfermented Mead Must)

- 2 kg (4 and 1/2 lbs) honey
- 4 l (1 U.S. gal) water
- 30 g (1 oz) hops (optional)

Bring to boil the honey and water. Add the hops and allow to steep. Cool and strain.

'Med'(Mead)

- For a dry mead, use 1.5 kg (3 lbs) honey and 4 l (1 U.S. gal) water.
- For a sweet mead use 1.8-2.0 kg (4-4 1/2 lbs) honey and 4l (1 U.S.) gal) water.

For details see mead making on the Internet. For general information see 'Making Mead: the Art and the Science' <http://www.nhb.org/foodtech/>

a) '**Med mezhyhirs'kyj**'(Mezhihirsk Mead - spiced dry mead)

- 5 kg (11 lbs) light honey
- 20 l (5 U.S. gals) water
- 1.5 g ginger
- 1.5 g nutmeg
- 6 cloves
- White wine yeast, yeast nutrient

b) **'Med starosvits'kyj'** (Old style Mead - spiced sweet mead)

- 9 kg (20 lbs) light honey
- 20 l (5 U.S. gals) water
- 5 g cardamon
- 2 g cloves
- White wine yeast, yeast nutrient

c) **'Med kyjivskyj'**(Kiev Mead - sweet hopped mead)

- 10 kg (22 lbs) light honey
- 20 l (5 U.S. gals) water
- 150-250 g hops (the 250 g would be equivalent to a very bitter beer)
- White wine yeast, yeast nutrient

'Syrivec'(Bread Kvas)

These days the recipes state that sliced and toasted rye bread should be soaked in hot water, the mash strained, and then sugar and yeast added. The older method is to add malted grain or roasted grain to the soaking bread. The malted grain provides the enzymes necessary to convert the starch to sugars, while the roasted grain provides color and flavor. You can make your own 'green' malted barley grain by soaking the grain and allowing it to sprout about 3 mm. This is rolled and added to the soaking bread. Barley grain can be roasted in a fry pan until golden brown, crushing and adding to the soaking bread.

- 2.5 kg dark rye bread rusks
- 500 g crushed 'green' malted barley grain and/or
- 500 g roasted and crushed barley grain
- (sometimes some honey comb was added)
- 20 l water
- Beer or bread yeast

Pour boiling water over the rye bread and cool to the conversion temperature of 65 degrees Centigrade. Add malted grain and/or roasted barley. Steep for 8 hours. Add yeast and ferment out. If you want a sparkling beer-like bread kvas, when the fermentation is ,pour into 2 litre plastic PET soft drink bottles and add 2 tsp sugar. A secondary bottle fermentation will carbonate the kvas.

'Burjakovyj kvas'(Beet Kvas - this was mainly used in cooking.)

- 2 kg beets
- 4 l water
- Yeast, although traditionally fermentation was spontaneous, relying on wild yeasts.

Wash and skin red beets. Pare into rings or grate. Place in a glass jar or crock pot and cover with warm water (temp. 24 degrees C). Add yeast. The kvas is ready to use in about a week or if allowed to stand the alcohol will turn to vinegar and it can be used for borshch.

'Berezovyj' and 'Klenovyj sik'(Birch and Maple Sap Kvas)

In early Spring the trunk of the trees are tapped for their sap and on average 20 litres can be obtained from one mature tree. Maple sap contains about 3% sugar while birch has about half this amount. The sap is taken in the first 2 weeks of March. A slanting hole 25 mm deep is bored in the trunk 400 mm above the ground and a tube is inserted, the other end leading to a jar. When finished the hole is plugged. An easier way is to attach a bottle to a cut branch that is directed downwards. Fermentation was spontaneous, although you could add a beer yeast to speed it along. Cranberries, guelder rose berries, roasted barley or roasted peas were added for flavor. Birch sap contains oil of wintergreen (menthyl salicylate), and birch sap kvas was regarded useful for chest ailments. For birch tapping details see <http://www.birchboy.com/articles.html> **'Jabluchnyk'**(Apple kvas)

Crab apples, wild pears, cranberries, bilberries, guelder rose berries (highbush cranberries) were used to make a fruit or berry kvas using a similar method, with the principal ingredient giving the kvas its name. Place sweet and crab apples in a barrel (or 20 l fermenter) and pour water over them. A sour dough starter was added to speed the fermentation. This was covered and weighed down to submerge the fruit or berries.

'Braha'

A type of unhopped beer, traditionally using malted millet grain. Hops began to be added in the 12th century and the resultant brew was then called 'pyvo'.

'Pyvo'(Beer)

Grain was malted by soaking and sprouting. This was then mashed in water, after which it was boiled with hops, cooled and then yeast added. Often mixed grains were used such as barley and millet. 'Pyvo' was generally brewed for special occasions, but its status was second to 'med'. Here are 2 typical recipes:

a) **Beer from barley**

- 6 kg crushed malted barley grain
- 5 glasses of hops (100 g)
- 20 litres water
- Beer yeast

b) **Beer from rye**

- 3 kg crushed malted rye grain
- 3 kg rye meal
- 1 glass of hops (20 g)
- 20 litres water
- Beer yeast

Brewing details can be found at 'How to Brew' <http://www.howtobrew.com/section1/chapter1-1.html>

'Nalyvka' style sweet wine:

Originally the term 'nalyvka' was used for a horilka flavored by steeping fruit or berries without added sugar. As sugar became affordable, liqueur style sweet wines began to be made using only fruit or berries and sugar, and relying on spontaneous fermentation. These are also called a 'nalyvka'. The addition of a wine yeast though, will ensure a rapid fermentation, with less chance for bacterial spoilage. Yeast generally will ferment 1 kg of sugar in 4 litres of water and any residual sugar will add sweetness to the 'nalyvka'. 7 kg of fruit or berries will produce about 4 litres of juice and will contain about 700 g of natural sugar. Here is a typical recipe:

Fruit or berry '**nalyvka**' by fermentation

- 7 kg fruit or berries
- 2.5 kg sugar
- Wine yeast

Place fruit or berries in a suitable large vessel. Add sugar and dissolved yeast. With added yeast and a rapid fermentation in a warm place, an air lock can be eliminated. When the primary fermentation has finished, rack off from the yeast deposit and bottle. The alcohol content would be about 12% by volume.

Flavored horilkas:

The horilka that was affordable to the villagers even in the 19th century was of a poor quality and a low strength (about 25% by volume), and so it was generally flavored. Two popular flavored horilkas made by infusion (warm steeping) were 'vareukha' which was favored by women, and 'zapikanka' which was favored by men as it contained cayenne pepper. A 19th century source does not mention the addition of sugar, only the addition of honey to 'vareukha'.

Methods used to produce flavored horilkas:

- 1) Infusion (warm steeping of fruits, berries, herbs and spices). Originally only honey was added. Later sugar was used.
- 2) Maceration (cold steeping of fruits and berries, herbs and spices). A 'nalyvka' was made using fruits and berries while a 'nastojanka' ('nastojka') was made using herbs and spices. Originally a 'nalyvka' was made by filling a container 3/4 full with fruit or berries and covering to the top with horilka. This was allowed to steep for 2 weeks. Sugar was not added.
- 3) Addition of pulp from fruits or berries to horilka.
- 4) Fermentation of fruits and berries and fortification with horilka.

1) Recipes using infusion:

'Vareukha'

This is basically a weakly alcoholic 'uzvar' or stewed fruit, sweetened with honey. Quite often it was drunk warm and the fruit eaten separately. The ingredients were placed in crockpot which was sealed and placed in a warm oven (90 degrees Centigrade) for 12 hours. These days you could just add horilka to the warm stewed fruit.

- 1 litre horilka
- 40 g dried apples
- 40 g dried morello cherries
- 25 g dried pears
- 25 g dried plums
- 250 g honey
- 1 g each of ginger, cinnamon, cloves
- 0.5 g pimento
- 1 bay leaf

'Zapikanka'

- 1 litre horilka
- 10 g ginger
- 10 g cayenne pepper
- 10 g cinnamon

- 10 g cloves
- 5 g nutmeg
- 5 g cardamon
- Zest of a lemon

Place ingredients in a crockpot. Seal and place in a warm oven (90C) to infuse for 12 hours. Cool, strain and bottle.

'Palenka'

- 1 litre horilka
- 1 kg berries or cherries
- 500-700 g sugar

Place horilka and berries in a crockpot. Seal and place in a warm oven (90C) to infuse for 12 hours. Strain. Add sugar. Bottle and age for one year.

2) Recipes using maceration:

'Spotykach'(Spiced horilka)

- 1 litre horilka
- 10 g cinnamon
- 20 g nutmeg
- 10 g cloves
- 10 g saffron
- 40 g vanilla bean

Macerate the ingredients in horilka for 2 weeks. Strain and add 400-800 g sugar.

'Pinna'

- 1 litre horilka
- 4 tsp. juniper berries
- Zest of a lemon
- 1/2 tsp. crushed ginger
- 350 g sugar

Macerate the botanicals for 2 weeks in the horilka. Strain. Add sugar. Bottle.

'Kalhanivka'(Tormentil horilka)

This was once popular as the herb 'kalhan' was regarded as a general tonic, good for gastric ailments and good to stop bleeding which made it useful to cossacks especially. Tormentil root was macerated in horilka to taste. 1-2 tablespoons of chopped rootstock for a 750 ml bottle of horilka would be a usual amount.

'Horobynivka'(Rowan horilka)

- 1 litre horilka
- 500 g rowan (mountain ash) berries

Macerate for 8-12 weeks. Strain. Add sugar to taste. Bottle.

'Slyvjanka' and 'Vyshnivka'(Plum horilka, Cherry horilka)

A sweet 'nalyvka' (liqueur) can be made from fruit and berries with the name derived from the fruit or berries used.

- Placed cleaned fruit in a large glass jar.
- Add horilka to cover the fruit.
- Seal and macerate for 2 weeks. The fruit will soak up the horilka and release some juice.
- For the first racking gently pour off the liquid .
- Layer the fruit in the jar with sugar to cover most of the fruit. Seal jar. The sugar makes the fruit release the horilka and shrivel slightly. In a couple of days the level of the juice should reach almost to the top of the fruit.
- For the second racking pour off the liquid and add to the first racking horilka.
- This racking can be repeated until only a very small amount of juice is released.
- Blend the different rackings to get the desired strength and sweetness.
- The left over syrup can be used in desserts.

3) Recipes using the addition of pulp:

'Morelivka'

- Stone ripe apricots. Cut into pieces and extract juice (use a blender).
- 1 litre horilka (4 cups)
- 3 cups juice

Allow to stand for 4 weeks. Strain and bottle.

'Mokrukha'

- 1 litre horilka
- Zest of 2 oranges
- 8-10 cloves
- 250 ml morello cherry juice

Macerate for 2 weeks. Strain and bottle. Age for 6 months.

'Tertukha'

- 1 kg wild strawberries
- 1 kg sugar
- 300 ml horilka

Mash the strawberries and sugar to a pulp. Add horilka.

4) Recipes using fermentation and fortification with horilka:

'Ternivka'(Sloe horilka)

- 5 kg sloe berries
- 500 g sugar
- 0.5 l horilka

- Additional 2.5 litres horilka

Fill a large jar with ripe sloe (blackthorn) berries that have been pricked in several places. Sprinkle with 500 g of sugar. Cover top and let it stand in a warm place for 6 weeks. Traditionally the fermentation was spontaneous, but the addition of a wine yeast would ensure a more rapid fermentation, lessening the chance of bacterial spoilage. When the fermentation has ceased, add to every 5kg (10 lbs) of fruit, 500 ml (1 pint) of horilka to stop the fermentation. Allow to stand several months to age. Strain and add another 2.5 litres of horilka. Bottle. For a sweeter 'Ternivka' add additional sugar.

'Vyshnivka'

- 2 kg morello cherries
- 1 litre horilka
- 3 g cinnamon
- 2 g nutmeg
- 500 g sugar

Mash cherries together with stones and ferment for 4 days. Add horilka and spices to stop the fermentation. Allow to stand for 2 weeks. Strain. Add sugar dissolved in 1 cup of water. Bottle.

Essential Oils

Wal writes ...

A 5 litre still for extracting essential oil is legal in Australia.

My understanding is that if you want the maximum yield, pot distillation is the method to use. Yields are below 5% therefore you need lots of material if you want pure oil and not just flavoring.

For % yield from herbs and spices see <http://www.switcheroo.com/Extracts.html>

For historical (Medieval) recipes see <http://www.gallowglass.org/jadwiga/herbs/oil&water.html> (and then select oils&water.html from the index).

Type "essential oils" in a search engine.

I have no personal experience in essential oil distilling except where I have distilled crushed aniseed, orange peel and lemon peel as part of the wash in a reflux still producing 70%abv, to produce raki and triple-sec. Tony Ackland (see [Flavoring](#)) uses a small pot still to produce a gin essence from botanicals specific for gin. Commercial gin distillers either macerate the botanicals in 45% alcohol by vol. and then redistill or pass the alcohol vapor through a suspended wire basket in (I suppose) the second distillation stage.

This is what the instructions for an 'Essential Oil Kit Distiller' say:

"There are 3 different methods to extract essential oils with your Still Spirits 5 litre Still.

Method 1. Water dissolvable oils.

Soak the material containing the oils to be extracted in water for 24 to 48 hours. Strain off the solids leaving just the liquid behind. Add this liquid to the still and bring to the boil. Make sure there is enough water flowing through the condenser to condense any steam which comes out of the condenser. Collect the distillate in 100 ml quantities. Test each 100 ml batch before combining to ensure quality is acceptable. As the condensate is driven off the nature of the oils will vary.

Method 2. Steam dissolvable oils.

Fill the still with 5 litres of water. Suspend the material containing the oils in a wire basket above

the level of the water. Bring the still to the boil and collect the condensate which is produced. As the steam passes through the material, it will pick up the oils and carry them through with the condensate. Make sure there is enough water flowing through the condenser to condense any steam which comes out of the condenser.

Method 3. Alcohol dissolvable oils.

Soak the material containing the oils to be extracted in 50% by volume alcohol for 24 to 48 hours. Strain off the solids leaving just the liquid behind. Add this liquid to the still and bring to the boil. Make sure there is enough water flowing through the condenser to condense any steam which comes out of the condenser, Collect the distillate in 100 ml quantities. Test each 100 ml batch before combining to ensure quality is acceptable. As the condensate is driven off the nature of the oils will vary."

As the vapor consists of alcohol and water my view is that Method 3 would suit all herbs and spices. You would need to check this.

The third method is basically what I do when making gin essence from juniper berries in my wee stovetop still. It is simply a 1L glass coffee pot, with a large cork in the top, through which a condensor sits. Total cost < NZ\$20.



Scrounge adds ...

There are two methods suitable with a pot still - dry heat (which doesn't work for many) and steam distillation.

I've found that rather than messing around with baskets to hold herbs about the steam it's perfectly possible to pack your still densely with the herb in question, add about 1/4 that volume water and distill slowly - the stuff that comes out the other end is a cloudy mixture of water and oils that soon settles out.

There are very few oils that occur in decent quantities to be worth trying at home - Lavender, rosemary, mint and citrus peel all work well. Chamomile can be done if you use an alcohol maceration and keep adding replacing the chamomile, what you end up with is very pleasant smelling spirit suitable for addition to bath water or skin application. Incidentally, chamomile comes off blue - just in case you worry what's happened to the still.

Jack writes ...

*..I have come up with a winner. The **small espresso pots** (that sit on your stovetop) that import/export shops carry are nothing more than a small steam still.*

They typically have a small lower chamber for the water, then a container that holds coffee grounds (the bottom is a perforated plate, keeping the grounds off of the water). Above this is a little spout that the steam (after going through the coffee) passes through, which empties out the espresso into the upper chamber. Look at what's available on the shelf at the store. Don't buy a coffee percolator- the thing I'm talking about allows only steam to pass through the coffee grounds (steam distilling the coffee). I bought one in the U.S.A. for \$10 (it's a small 3 cup model), made of aluminum, and works great for steam distilling rosemary and lavender oil.

When I pour the steam distilled product out of where the coffee normally is into a glass cup, these oils show up as an oil on water layer- to prevent them from going moldy, I add some petroleum ether (mineral spirits), shake in a sealed jar, then pour off the top (ether) layer and evaporate it, leaving behind the essential oil. I haven't tried it with cirtus, juniper, nutmeg, or anything else, but it should work for these plants/flowers.

By the way- use distilled water for the best results.

Using Oils

Wal writes ..

I am one who believes that using natural flavors is a great part of home distillation, and that valid flavor variations are superior to poor imitations. With this in mind I have been trying to rationalise the myriad of empirically based recipes. A good starting point is to find out the percentage yield of essential oil from the common herbs and spices used, as these produce the flavors. Knowing how much essential oil is required to produce the desired taste, we can work out the quantity of raw material required. We can macerate this material in alcohol and then redistill, adjusting the taste with clean alcohol, or we can add it to (or above) the mash/wash and distill together.

A useful site for essential oil yield is: <http://www.benzalco.com/> While there check out their pot stills. For details of herbs see: <http://www.botanical.com>.

Recipes indicate that 7 drops of essential oil per litre of spirit is the minimum requirement. About 1/2tsp. of essential oil/litre of alcohol (40%abv) seems to be the optimum amount. To be safe, begin by using 1/8 tsp., then add more drops of oil until you are satisfied with the flavor. With anise oil you should not go below proof as the anise oil turns white in water. Extracts are essential oils diluted in alcohol and usually 4 units of extract is equivalent to 1 unit of essential oil. The S.G. of oil is about 0.8kg/l.

Examples-

- **Anise flavor.** Crushed anise seeds give an oil yield of 1.5 - 4%. Assuming a practical 2% yield, 100g of crushed aniseed for each litre of alcohol (50%abv) should be sufficient.(about 2.5ml or 1/2tsp. of oil). Therefore adding 500g crushed aniseed to a 25l wash should be sufficient for the 5l

of alcohol (50%abv) one can obtain. 2tsp. of aniseed weighs approx. 10g while 4 heaped tablespoons weigh about 50g.

- **Orange flavor.** Citrus peels have a potential oil yield of 1.5 - 2%. The peel from one orange weighs about 50g. Therefore you need the peel of 3 oranges(150g) for each litre of alcohol (40%abv). This yields about 1/2tsp. of orange oil for each litre of alcohol. You can macerate this amount in alcohol to draw out the oil for liqueurs if you don't mind the orange tinge.
- **Lemon flavor.** You need the peel of about 6 lemons for each litre of alcohol (about 2.5ml or 1/2tsp. of essential oil). Literature suggests that a 1000 lemons are required to produce one pound of essential oil. Macerate this amount in alcohol to make limoncello (750ml 40% alcohol, peel from 6lemons, 2 1/2 cups sugar, 2 1/4 cups water - macerate for 2-4 weeks.)
- **Gin.** It appears to me from 2 sites that of the main ingredients you need are 25g of juniper berries and 12.5g coriander seeds for each litre of alcohol (45%abv). The oil yield from juniper berries is 1.5% and for coriander seeds its 1%. Therefore about 7 drops of juniper oil and 3 drops of coriander oil would be quite sufficient, together with small amounts of the other herbals. Dutch gin is stronger flavored, and historically used malted grains in the mash. The use of pure alcohol is a modern idea.
- **Oak.** Wine makers use 1-5g of oak shavings per litre of wine, checking every 2 months until the desired flavor is obtained. A similar quantity would be appropriate for alcohol. American oak has more vanillins than French oak and is preferred for whisky, rum and bourbon. Scotch and rum is aged in casks which held oloroso sherry, and this can be imitated by soaking the chips in dry Spanish oloroso sherry before adding to the alcohol. Toasting oak produces sugars and vanillins, and adding toasted oak to make brandy quickens the process, as French oak being high in tannin takes a while to mellow.
- **Rum.** You can use raw sugar to produce light white rums like those from cane syrup or use molasses (50% sugar) for stronger flavors. For the south-east asian arak you can use palm sugar which comes from Thailand and Indonesia and is sold in Chinese grocery stores. Use sherry soaked oak chips to produce gold rum. Add caramel to produce dark rum. This gives a good idea of typical ingredients. There is no reason why you cannot make your own according to taste.

Alcoholic strength effects aroma. The trigger point for volatile citric aromas would appear to be around 40%. Dilute to below that strength and you will kill them. 45% abv appears to be ideal for gin. The flavoring ingredients are all natural and are referred to as 'botanicals'. All gins include juniper and coriander. Gordon's also uses ginger, cassia oil and nutmeg. Beefeater uses bitter orange peel, angelica root and seed. Plymouth's 7 botanicals include sweet orange peel, cardamon . Bombay Sapphire uses cubeb berries, cassia bark, grains of paradise, almonds, lemon peel, liquorice, orris root, angelica root. Typically a fine gin contains 6-10 botanicals. The combination of botanicals is important. Angelica root helps to hold in the volatile citric aromas. In most cases the botanicals are steeped in 45% alcohol. This is then redistilled to release the essential oils from the botanicals (less than 5% of the weight - you can therefore work out your yield). Only the middle run at about 80-85% is used.

More essential oil links from Wal ...

- The Ancient Book of Formulas by Lewis De Claremont <http://www.luckymojo.com/esoteric/occultism/magic/spells/ancientbookformulas.html>
- "Extracts and Flavoring Oils" <http://www.switcheroo.com/Extracts.html>