

How-To: Gelatin/Agar Filtration

by [Mongpoovian](#) on October 21, 2008

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Intro: How-To: Gelatin/Agar Filtration

Filtration (separation of solids from liquids) is a common task in the kitchen. It's used to make tea, coffee, and to clarify soup stock.

Typically, liquids with large amounts of suspended solids are clarified by successive filtrations. Large chunks are removed manually by skimming, and smaller bits can be removed by passing the material through a sieve. But if you want a crystal clear consommé, you need to take more drastic steps. Usually, a **mixture of egg whites and meat** is used to collect the smaller particulates into a "raft" which can be skimmed or strained off.

In addition to not exactly being vegetarian or vegan friendly, this technique can hardly be used to clarify other cloudy beverages, like juices or broths made with unusual ingredients.

Enter "**gelatin**" filtration .

This is a simple three-step process that you can use to clarify *any* liquid.

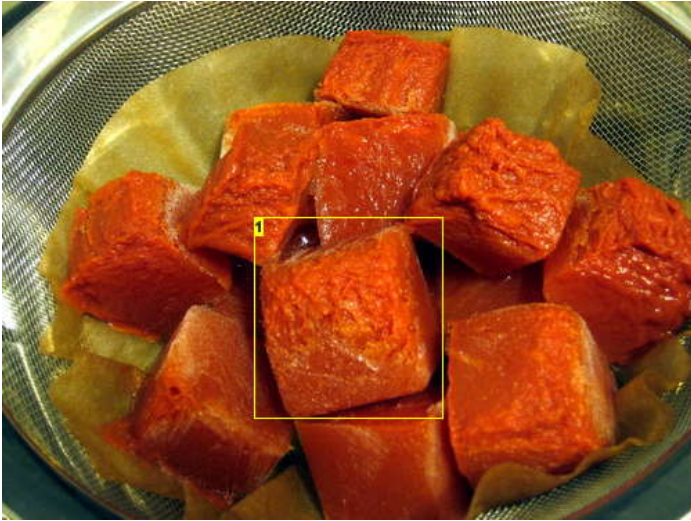


Image Notes

1. As the frozen stuff melts, it'll start to "deflate." While ugly, this is the desired behavior.

step 1: The Science

Gelatin and agar-agar both consist of long chains of molecules that can be detangled and dispersed in hot water. Upon cooling, the long chains can intertwine with each other. The network of entangled chains entraps pockets of water, resulting in a jiggly semisolid.

If the gel is frozen, the pockets of water will form treacherously sharp crystals, destabilizing the gel network and allowing the liquid to flow out (once thawed). This is an example of "syneresis," a fancy word for the removal of fluid from a gel.

Incidentally, this is why cryogenics isn't feasible at the moment. Cells are one example of a gel-like structure. As water crystals form, they burst cells, resulting in an unpleasant mess upon thawing.

Anyway, if the thawing is done over a coffee filter, the residual gelatin/agar and solids will be left behind, and the crystal clear liquid will drip through to be collected.

I found the recipe for this in the [Khyμος Hydrocolloid Recipe Collection](#) , which I would highly recommend for anyone interested in molecular gastronomy.

step 2: What You'll Need

Get together the following:

- Agar-agar or unflavored gelatin
- A liquid to be clarified
- A microwave-safe container
- Ice cube trays (optional)

I used agar agar for this filtration, which (according to the recipe collection) gives up its liquid much faster than gelatin. You can find it in stick or powdered form at any Asian market and some well-stocked gourmet or health food stores.

The liquid we'll be clarifying is V-8, since it has an absurdly large amount of suspended solids.

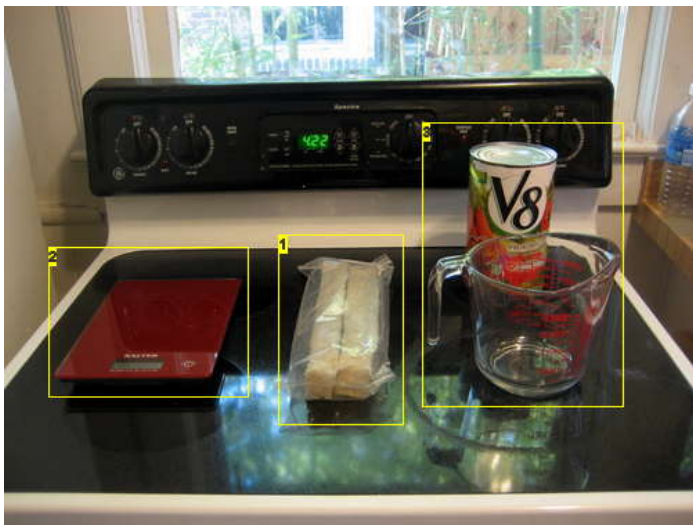


Image Notes

1. Two sticks of agar-agar
2. 1 gram scale
3. V-8 and a pyrex container

step 3: Gel Preparation

Measure out some liquid, and heat it to boiling in the microwave.

While that's heating, measure out your gelling agent (agar or gelatin).

For 1000 milliliters (1 liter, ~4 1/4 cups) of liquid, you need between 3/4 and 1 3/4 grams of agar - OR - 5 grams of gelatin.

The agar I bought was in 10 inch sticks which weighed about 10 grams, so I just sawed off half an inch.

Once the liquid is boiling, put the gelling agent into the liquid and let it sit for a few minutes to hydrate. Bring the liquid to a boil in the microwave again, stirring occasionally until the gelling agent is completely dissolved.

Let the liquid cool to room temperature.



Image Notes

1. A half-inch chunk of agar.



Image Notes
1. One stick equals 10 grams

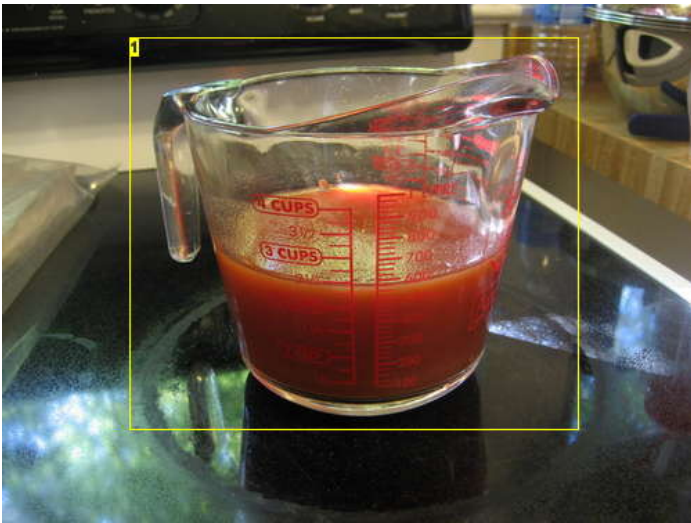


Image Notes
1. 500 ml of V-8



step 4: Freeze!

Like it says, freeze that bad boy.

I dispensed my liquid into ice cube trays because I needed the container I boiled the stuff in, but that isn't crucial.



Image Notes

1. Liquid in the evening...

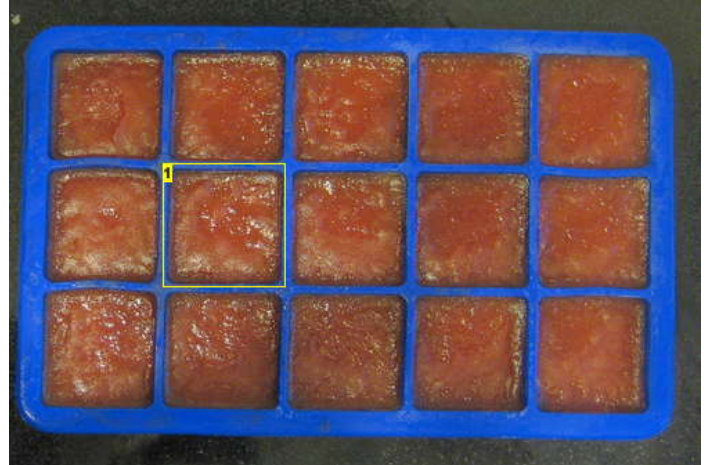


Image Notes

1. Frosty in the morning!

step 5: Thaw and Collect!

Take a colander, sieve, or some other porous container and line it with a coffee filter. Place the frozen gel onto the filter, and put the whole assembly onto a container to collect the clarified liquid. Go to work/sleep/wherever, and let it thaw slowly in the refrigerator.

If your refrigerator is, like mine, permanently stuck just above freezing, stick the assembly in a large ice chest with some ice to keep it chilled.

Or, leave it on the counter and monitor its progress every 20 minutes or so. Don't leave it out overnight, though - you don't want to let it spoil!

Once the mass has been completely defrosted, you're done! Collect the clear golden liquid and enjoy in the manner of your choosing.

I got about 275 ml of clarified V-8. Other liquids, like soup stock or lemonade should result in more collected liquid, as they contain less solids to begin with.

Remember - you can do this with any liquid. The sky's the limit! Want to have a crystal clear asparagus broth? Cheese water? Essence of blueberry? This is the way to do it.

Bon appetit!

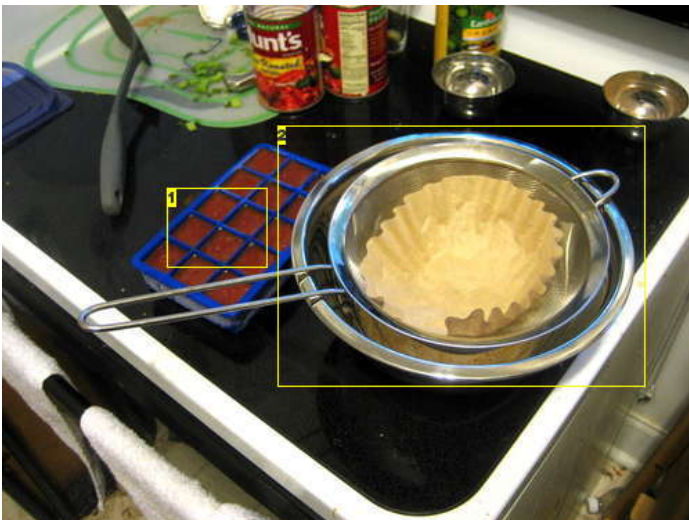


Image Notes

1. Frozen gel cubes
2. Coffee filter, in a strainer, on a bowl.

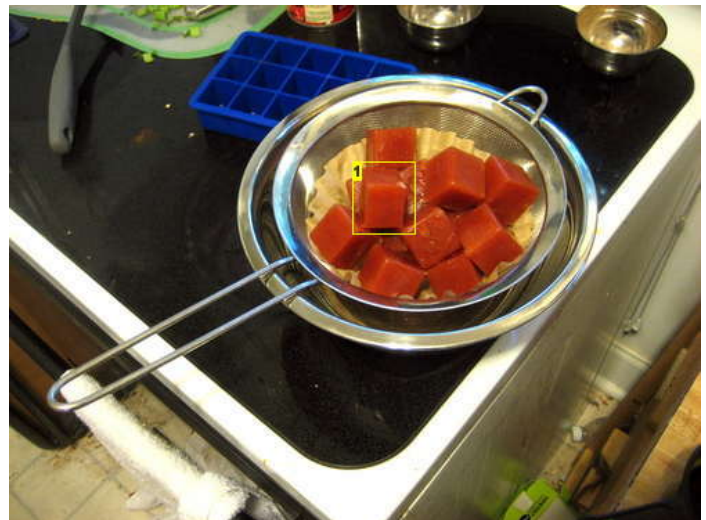


Image Notes

1. Cubes, ready for thawing.

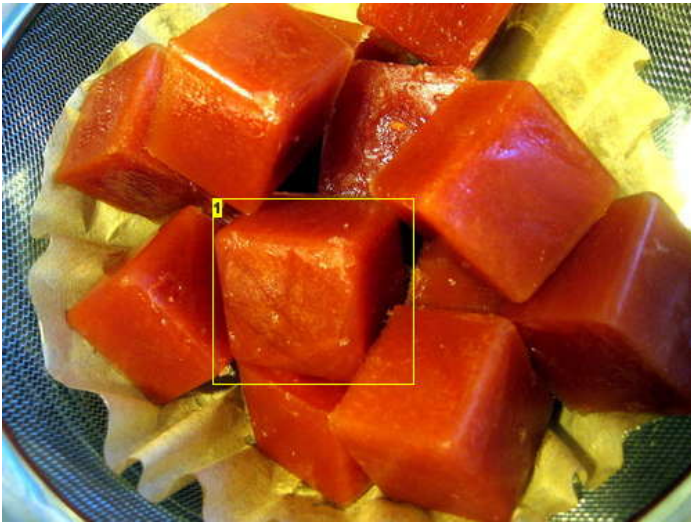


Image Notes
1. Still frozen cubes.

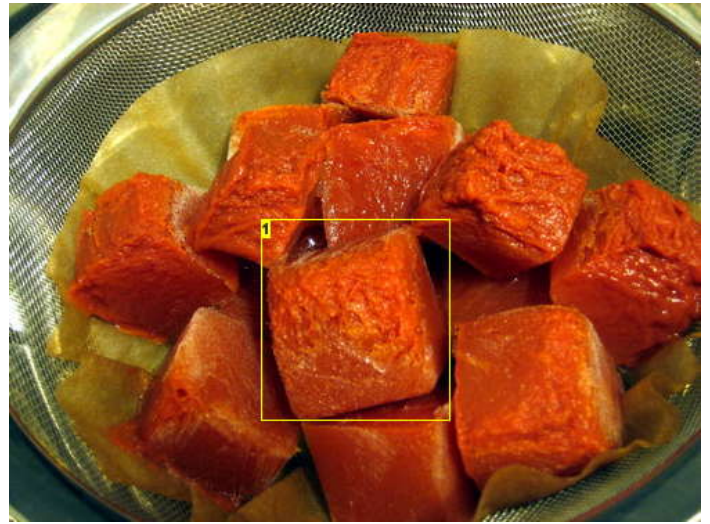


Image Notes
1. As the frozen stuff melts, it'll start to "deflate." While ugly, this is the desired behavior.



Image Notes
1. Total deflation, totally defrosted, filtration complete.



Image Notes
1. Clear, golden liquid that tastes exactly like V-8 is your reward.



Image Notes
1. About 275 ml collected.

Related Instructables



Carrot Caviar by mzed



Make a Microbial Fuel Cell (MFC) - Part 1 by egbertfitzwilly



Rum Bubble Surprise by Mongpoovian



Whipped Chocolate with carbonated strawberries by Dr. D



Simple Algae Home CO2 Scrubber - Part II Algae Cultures and Breeding by egbertfitzwilly



Make a Microbial Fuel Cell (MFC) - Part II by egbertfitzwilly



Make Lye From Salt and Gelatin by egbertfitzwilly



Ballistic Gel by demon fang

Comments

11 comments [Add Comment](#)



EIChick says:

Mar 11, 2010. 3:14 PM [REPLY](#)

I have to say this first of all - EXCELLENT Instructable. I thoroughly enjoy reading your 'ibles, which are not only very well written, but very informative. One can tell that you've done your homework. Masterfully done!!

On a more aesthetic note....V8 may have been a great liquid to use based on it's suspended solids content, but pleasing to the eye it sure ain't. Yech. The remains of the gel look like bloody little red bags of deflated meat that has been drowned then drained and left partially soggy....which come to think of it, I guess that is kind of what they went thru. As for the result....I'll just have to take your word on the "golden liquid" tasting like V8.....it sure doesn't look like anything *I'd* ever drink!!! *Random thought alert* Healthy V8 flavored yellow snow-cones anyone? (80)>

Great 'ible regardless!!! Keep up the awesomely crafted 'ibles! They are truly a pleasure to peruse.



onetruecathal says:

Jan 26, 2010. 3:32 AM [REPLY](#)

For small quantities, you could also centrifuge the broth/liquid to flatten out all the suspended solids. I plan to try this with my Dremelfuge ! Because I *am* vegetarian and I want to make some "trick-flavour" ice creams.



burnout_11 says:

Jun 22, 2009. 11:47 AM [REPLY](#)

Does powdered agar work? I've tried looking it up on the Internet but there is nothing about it.



Mongpoovian says:

Jun 22, 2009. 3:13 PM [REPLY](#)

Powdered agar will work just fine. And, as a bonus, the packages usually have the weight on them for easy dispensing.



mycroftxxx says:

Oct 21, 2008. 3:16 PM [REPLY](#)

Kick-butt piece of molecular gastronomy



Mongpoovian says:

Oct 21, 2008. 4:29 PM [REPLY](#)

Thanks!



bbstudio says:

Oct 23, 2008. 12:23 PM [REPLY](#)

just thought I would chime in on the Gelatin/Agar issue. Gelatin is an animal derivative made by boiling bones, connective tissue, organs and intestines. So agar would be a much better choice for vegetarians/vegans as it is made from seaweed.



westfw says:

Oct 21, 2008. 11:12 PM [REPLY](#)

oohh. Neat idea. I never had much luck with the egg white method. Unfortunately, I think my Agar was a victim of my last cabinet cleanup, so I can't immediately apply this to the duck stock I'm working on... What does V8 with no solids in it taste like, anyway?



Mongpoovian says:

Oct 22, 2008. 3:51 AM [REPLY](#)

That's why I try to avoid tidying up whenever possible. :) It tastes like V8! Drinking it is very different from drinking the real stuff, though, because losing the solids removes most of the texture. I think this would make a dynamite bloody mary. Or would that be a pacifist mary?



westfw says:

Oct 22, 2008. 7:32 AM **REPLY**

Well, eventually one wonders whether one would dare use a food product that old, anyway, at which point you might as well throw it away. I've got "staples" older than some of the members here, I think... I think it would be a "Plasma Mary."



Mongpoovian says:

Oct 22, 2008. 8:09 AM **REPLY**

True, true. I just can't bring myself to throw something away unless it's clearly stale or rotting, which is a terrible habit since at some point you stop thinking to use items because they *might* be stale.

Also, Plasma Mary? Perfect!
