

Glass Cookbook

Home is a perfect place to discover glass in our everyday lives! Glass Cookbook: What is glass made of?

Glass can be found everywhere! In the windows of our home, in the glasses in our kitchen cabinets, and even in our pockets. But what is it before it becomes all of those things? Can I make it?

Join us as we cook up some glass following this "glass recipe".

Makes about 2 tons of glass.

Serves everyone.

Prep time: 1-2 hours

Cook time: 18 hours

Cooling time: 10-40 hours

Ingredients of glass:

- 1500 lbs. Pure Silica Sand (SiO_2)
- 550 lbs. Soda Ash (Sodium Carbonate) (Na_2CO_3)
- 150 lbs. Limestone
- 65 lbs. Sodium Nitrate (NaNO_3)
- 1 lb. Feldspar
- 1 lb. Lithium Carbonate (Li_2CO_3)
- 1 lb. Zinc Oxide (ZnO)
- 1 lb. Barium Carbonate (BaCO_3)
- 1 lb. Fluorspar (CaF_2)
- 1 lb. Antimony oxide (Sb_2O_3)
- 1 lb. Erbium (Er)

How to Prepare:

Step 1. Put on a respirator! These chemicals are dusty and can get into your lungs.

Step 2. Combine all ingredients using a large mixer.

Step 3. Heat about 100 lbs. of the mixture in a gas (or electric) furnace at $2,400^\circ\text{F}$.

Step 4. Allow to heat for about 1 hour at $2,400^\circ\text{F}$.

Step 5. Repeat steps 3 and 4 until your furnace is full. Continue heating at $2,400^\circ\text{F}$ for 9 hours.

Step 6. Reduce heat to a light simmer, about $1,950^\circ\text{F}$, for 9 hours.

Step 7a. If using glass for blowing, increase heat to $2,100^\circ\text{F}$ and use immediately.

Step 7b. If using glass for sheets or plate glass, ladle glass out of the furnace and smash flat.

Step 8. Once finished with your masterpiece, place into an oven at 920°F .

Step 9. Slowly cool for 10 hours.

Step 10. Voilà! Remove items from the oven and use!

Variation: Fulgurites

Replace your heat with lightning! Fulgurites are forms that are created when lightning discharges into the ground and its high heat causes sand, soil, and organic debris to fuse and/or vitrify.



Ingredients List:

- Large area of sand such as a beach, desert or dune
- Lightning Storm
- Metal Stick (optional)
- Luck

How to Prepare:

Option 1

1. Drive metal stake into ground
2. Wait for storm
3. Get lucky and have the lightning hit the rod.
4. Carefully remove Fulgurite from the ground

Option 2

1. Have lightning strike the beach, desert or dune.
2. Get lucky and find it the next day!

Activity: Create your own unique recipe for glass!

Here is what you will need for this imaginary recipe:

- Paper
- Pencil or writing utensil
- Your imagination

What to do:

Using the ingredients of glass as a starting point, add your own unique ingredients and create an imaginary recipe for glass! You can either write, draw or write and draw your recipe!

- What could you add to make your glass sparkle?
- What could you add to make your glass smell sweet or stinky?
- What might you add to give your glass magical powers?
- What other variations of glass recipes can you create? What other recipes can you invent?

Share Your Cookbook

Let us know what you have cooked up! Post a photo of your cookbook! Tag us on Instagram, Facebook, or Twitter @pghglasscenter and we might share your creation.